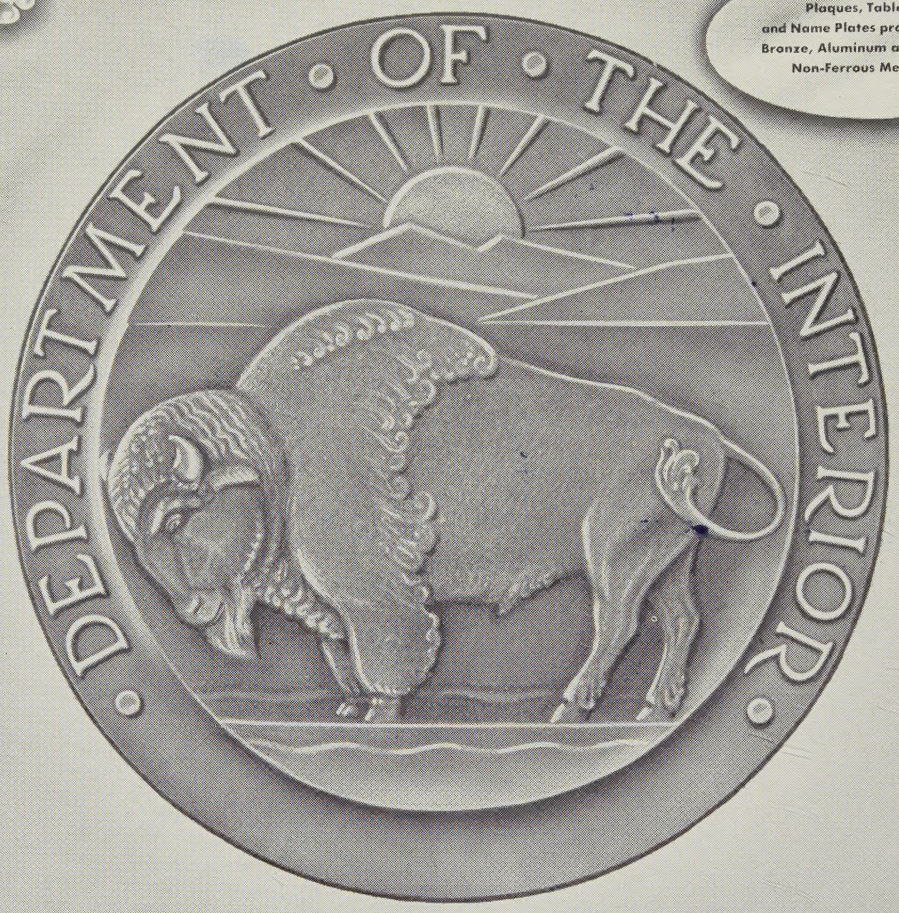
ARCHITECT AND ENGINEER

CALIFORNIA GOLD CENTENNIAL DUTCH FLAT . . . A Modern Home

BOLTON WHITE, Architect, A.I.A.

EBRUARY 1948



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★

COVER PICTURE:

Gold was discovered in California just 100 years ago—1848—and among the famous old "Gold Digging" areas is DUTCH FLAT, Placer County.

Improvised shelters of the "sourdoughs" have been replaced by modern homes as the residence of Mrs. Anna Young, created by Architect Bolton White, indicates.

(See Story on Page 18)

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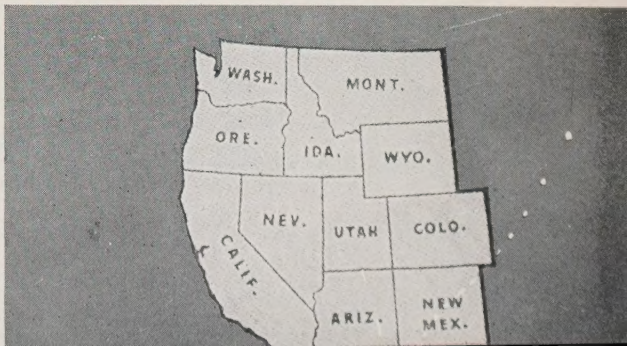


EDITORIAL NOTES

Among paramount national problems facing members of the 80th Congress will be the "housing" of Americans.

Already there appears a definite drawing of lines between forces who feel the only sane and sensible approach to a solution of the ever growing problem is for the government to withdraw from the picture completely and leave the matter to private enterprise, and those who feel that only by government control can adequate housing be obtained.

Obviously there are strong arguments in support of each plan of procedure, however, it is hoped that arguments will not delay immediate action and that the public who need the housing do not have to wait until sometime next fall to find out whether the current legislative consideration will produce a "home" or will be merely the political prelude to a presidential campaign.

* * *

Shades of pending Republican prosperity cast their shadows before us—a San Francisco Architect has a $100,000 private residence under construction for a Client.

* * *

Professional standards are usually the results of many years of effort on the part of sincere men and women to establish equable rules and regulations by which members of their profession contact the public. Such fundamental standards, or ethics, as they are more frequently called, serve a dual capacity for they are a protection to members of the profession as well as protection to the public.

The practice of Architecture is one of the oldest professions known to man for from the very beginning mankind has been building—culture, arts, science, all are contributors to the building of the human race.

In today's modern world the destiny of the Architectural profession is being led by The American Institute of Architecture, a nation-wide cooperative non-profit, organization with general headquarters offices in Washington, D. C.

Local district Chapters and State Councils comprising men and women representing every part of the nation form an integral, active, part of the American Institute of Architects.

Through the coordinated efforts of these Chapters, and the parent Institute, the practice of Architecture has become widely recognized as one of the major professions of modern times.

In many states there have been enacted laws which govern the basic principles of the practice of Architecture. Laws which establish the basic knowledge a man or woman must possess before they may become known as an Architect.

Unfortunately, however, as is the case in any profession, there are those who attempt to engage in the practice of Architecture who have not, and frequently can not, meet the required standards of professional knowledge.

Public officials are constantly on the alert for these "Quacks", but it is also the responsibility of the public to make sure before engaging in a building project and seeking the assistance of an Architect, that the Architect selected is in reality a qualified Architect as determined by accepted principles and ethics of the Architectural profession.

* * *

Gasoline revenues in the State of Caelifornia increased 67.85 per cent over the same month of the previous year when the increase in tax to motorists was increased 3½ to 4½c per gallon. It is estimated there was a gain of 10.9 per cent in the amount of gallonage distributed during the month.

In terms of dollars and cents gasoline users paid $10,671,297.73 net to the State of California in taxes for the one month.

Admitting there may be some increases in cost of maintaining and constructing state highways over a year ago, there appears to be a substantial margin left for the betterment of California's highways.

* * *

In announcing the 1948 drive for some $75,000,000 to carry on the program of the American Red Cross, officials of the organization point out that the United States was hit by the most destructive series of major disasters in history in 1947.

During the first eleven months of the year, there were two-hundred and eighty seven catastrophies requiring Red Cross assistance. In these disaster relief operations, the American Red Cross allocated more than $10,000,000 and gave aid to more than three hundred and five thousand persons.

Few sections of the country were spared in the disasters which visited forty-six states and Alaska.

You can do your part towards continuing the work of the American Red Cross by helping them reach the $75,000,000 goal set for their annual drive during March.

* * *

The 97 per cent of the Russian population who are not Communist Party members have been wont to speak of their coinage facetiously as "funny money." Moscow's recent specific in American terms meant that every dollar in circulation be exchanged within a week for a dime. Such heroic treatment of the financial ills of a nation is only possible in a country where millions of people have been accepting "funny money" for centuries.

NEWS AND COMMENT ON ART

UNIVERSITY OF OREGON SCHOOL OF ARCHITECTURE

The School of Architecture and Allied Arts has announced their March exhibit will feature the work of ECKBO, ROYSTON & WILLIAMS prominent landscape architects.

The Exhibit will be shown from March 6 to 20.

CALIFORNIA SCHOOL OF FINE ARTS

Special art classes for children are again being offered by the California School of Fine Arts, 800 Chestnut Street, San Francisco, for the Spring Term of 1948. Enrollment is open in three student groups with classes held each Saturday morning.

The first group is designed for students of the primary age and is supervised by Jean Kewell; the other two classes are for students of school age and are under the direction of Ruth Cravath Wakefield and Hassel Smith.

NEW ARTISTS' GROUP FORMED. An organization known as the "Artists' Group of Bay Area Associated" was formed recently at the Rudolph Schaeffer School of Design, San Francisco.

CITY OF PARIS SAN FRANCISCO

An exhibition of Oils, Gouache, and Tempera by Dorothy Brett and Ila McAfee of Taos, New Mexico, and Marousya Hadgadya of Hollywood, will be shown in the Rotunda Gallery, Fourth Floor, from February 4 to 28th.

In the Art In Action Shop, Painting of the Month will be by Otis Oldfield. New Ascher Scarfs will be shown, and a special exhibit of ceramics by Laura Andreson, Whitney Atchley, Tressa Cramer and Inguardt Olson will be shown February 1 to 28.

CALIFORNIA PALACE OF THE LEGION OF HONOR

Thomas Carr Howe, Jr., Director of the California Palace of the Legion of Honor, Lincoln Park, San Francisco, has announced the following schedule of exhibitions and special events for February:

EXHIBITIONS: Outstanding Americans of Negro Origin; Modern French Tapestries, Mexico, Real and Imaginary, drawings by Eugene Berman (opening February 28th); Ceramics by Dan Rhodes; Photographs by Cartier-Bresson, and Oils by Fred Sexton.

The Alma de Bretteville Spreckels Collection of Sculpture by Auguste Rodin; The Mildred Anna Williams Collection of Paintings, Sculpture, Tapestries and Furniture, and the Collis Potter Huntington Memorial Collection of 18th Century French Paintings, Sculpture, Tapestries, Furniture, and Porcelain.

EDUCATIONAL ACTIVITIES: Classes for children each Saturday morning at 10 o'clock. Instruction by Katharine L. Parker, Lilly Weil Jaffe, and Frank Lobdell. Adult painting each Saturday afternoon under direction of Frank Lobdell.

SPECIAL PROGRAMS: Organ Recital each Saturday and Sunday at 5 p.m. by Uda Waldrop. Free Motion pictures each Saturday at 2:30 p.m.

SAN FRANCISCO MUSEUM OF ART

The program of events and exhibitions scheduled for February at the San Francisco Museum of Art, Civic Center, San Francisco, will include:

EXHIBITIONS: Paintings by Keith Martin; John

Holland Memorial Exhibition; Photographs by W. Russell Everritt and Lawton Kennedy; Paintings by Helen Schwinger; The Sixty-seventh Oil & Sculpture Annual of the San Francisco Art Association.

ACTIVITIES: "From Spanish Colonial to Modern Times in Latin American Art" a series of three lectures by Dr. Alfred Neumeyer, February 12, 19 and 26 at 2:30 p.m., Symphony Luncheon, sponsored by the Women's Board February 27th 12-Noon. Henry Moore, first American showing, a color film of the artists work, narrated by Moore himself, February 27th at 8 p.m.

The San Francisco Museum of Art will be closed for renovation beginning March 1, 1948.

Winners In Annual International Design Competition Are Announced

There were six winners of the First Award and eleven winners of Honorable Mention in the annual competition of the American Institute of Decorators for fabrics, furniture, lighting and wall coverings used in the home-furnishing field during the year 1947.

Announcement of the winners was made at the Institute's headquarters in New York City and included two Californians in the First Award group and two Californians in the Honorable Mention group.

Designers whose achievements during the past year commanded top honors were:

Claire Falkenstein of Berkeley, for a wall covering design which she calls "Vertebrate Mass" and consists of lavender lines on a black background; Maurice Martine of Corona del Mar for a furniture design which embodies the combined use of metal, cords, and wood; Erwine Laverne and Mrs. Estelle Laverne of New York City, for a printed fabric; Joan L. Maag also of New York City, for a woven fabric; Kurt Versen of Englewood, New Jersey, for a lighting design.

Honorable Mention citations were awarded by the jury of seven to eleven designers in the same fields, and included in this group were:

Dorothy W. Liebes and Dorr Bothwell, both of San Francisco, for wall covering designs; Ruth Adler of Detroit, Else Regensteiner and Julia McVicker of Chicago, Pipsan Saarinen Swanson of Bloomfield Hills, Michigan; Angelo Testa of Chicago, and Samuel E. Tushingham of Detroit for fabric designs. Florence Knoll and George Nelson of New York for furniture designs, and Zahara Schatz of New York and Pipsan Saarinen Swanson for lighting designs.

The citation winners were feted at a banquet in their honor at the Architectural League of New York on Thursday night, February 26, when Joseph Mullen, President of the AID, made a personal presentation of the citations. In addition to AID members, the function was attended by members of the Architectural League — artists, painters, sculptors, photographers, and editors—who participated in the ceremonies and helped to inaugurate a three-week exhibit of the 18 citation designs, besides 17 designs which were selected by the seven-man jury who judged the competition without knowing the names of the contestants.

After the exhibit closes at the Architectural League's galleries the 35 design entries will tour the country for one year, with the second showing in Los Angeles toward the end of March.

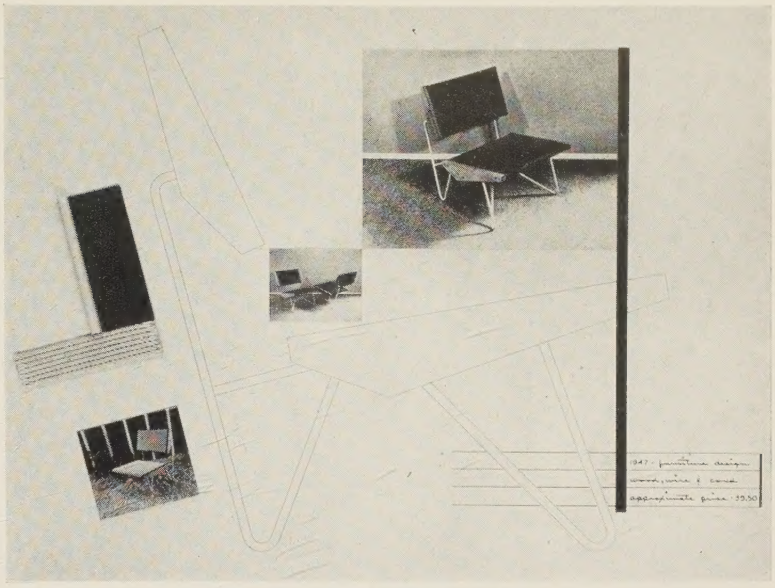
According to Theodor Muller, chairman of the Committee on Awards, the AID's annual competition is open to interior designers of all nations. Members of the jury represent the education, museum, architectural and retailing fields, in which they have distinguished themselves.

The AID's object in giving the annual awards is to make known to the consumer public what the market offers in good design; and to commend those who create designs in fields related to interior design and decoration.

The 1947 Jury consisted of Max Abramovitz, Deputy Director of Planning for the United Nations headquarters; W. E. S. Griswold, Jr., President of W & J Sloane Company, New York; Carl Koch, professor of Architecture, Massachusetts Institute of Technology; Samuel A. Marx, architect, Chicago; Mrs. Michelle Murphy, Curator of the Industrial Design Division, the Brooklyn Museum; Jack H. Per-Lee, Vice-President in charge of Home Furnishings at Lord & Taylor, New York; and Andrew C. Ritchie, Director of the Albright Art Gallery, Buffalo, N. Y.

The entries selected by the jury for citations and exhibition purposes represent designs which are in production and available for purchase on the current consumer market.

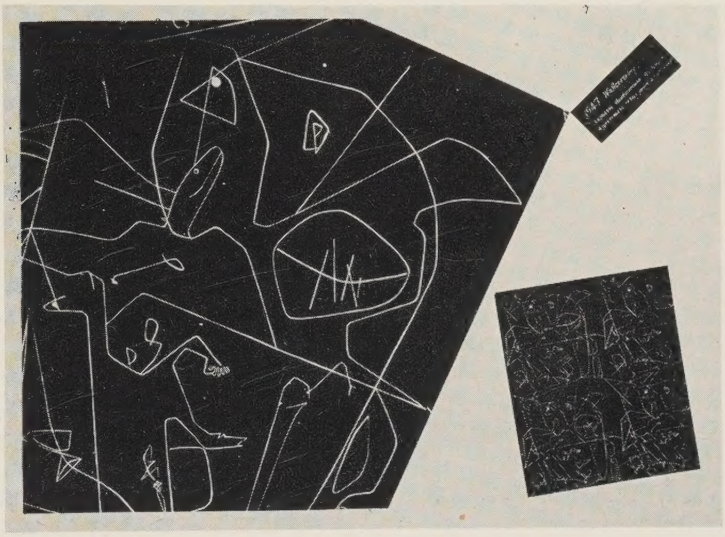
(See Illustrations on opposite Page)



WOOD-WIRE-CORD CHAIR

This functional chair of wood, wire and cord won First Award in the international competition of American Institute of Decorators, New York City.

Maurice Martine, Designer
Corna del Mar, California



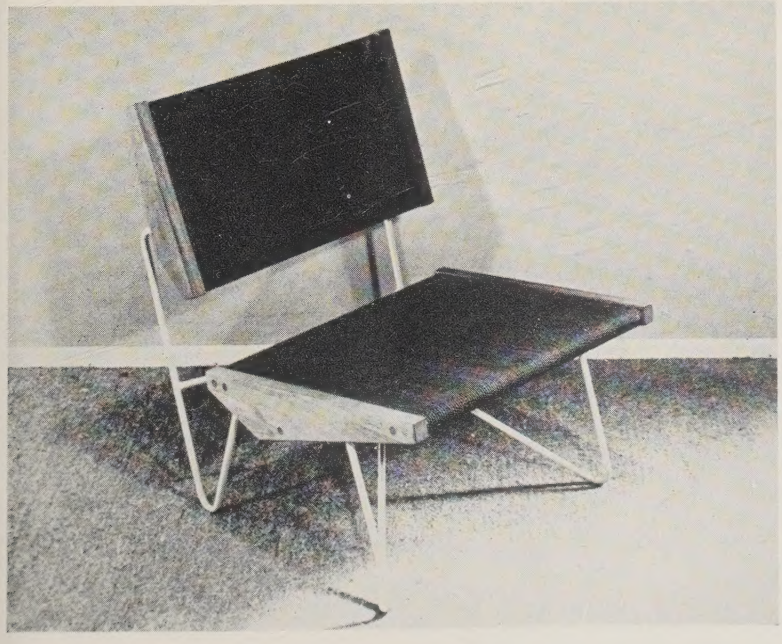
FIRST AWARD

Wall Covering Design called "Vertebrate Mass"—lavender lines on black background.

Claire Falkenstein

Artist & Designer

Berkeley, California

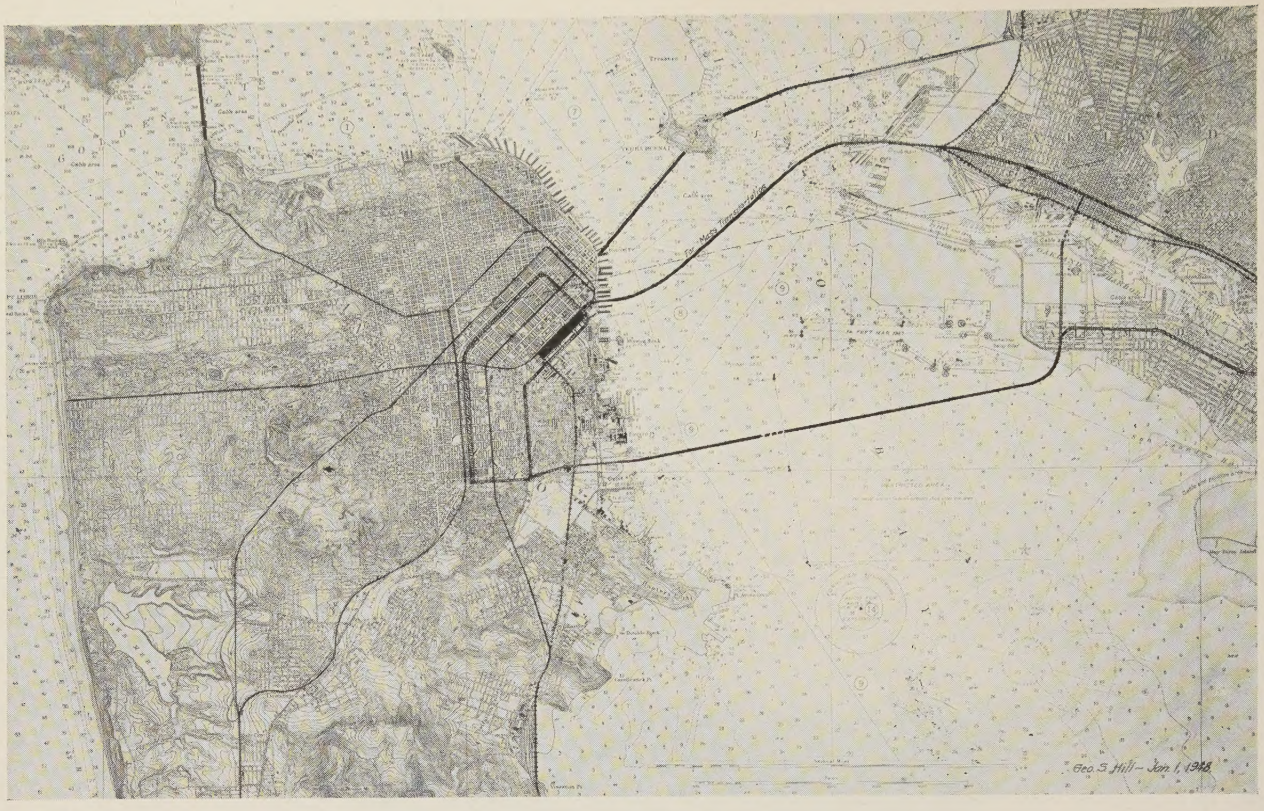


DETAILED VIEW OF FIRST AWARD CHAIR

Showing combined use of metal supports for seat of tightly stretched cords, back, legs, and wood.

Award made by a seven man jury.

Retail price of chair is $39.50.



MASS TRANSPORTATION AND TERMINALS

SAN FRANCISCO AND EAST BAY CITIES

By GEORGE S. HILL

This article deals with the subject of providing rail facilities and mass transportation between San Francisco and the East-Bay cities.

The Army-Navy plan for a bridge from Army Street in San Francisco to Alameda has been endorsed by practically all of the civic groups in San Francisco. When constructed, this bridge will provide a direct outlet eastward from the center of the City and County of San Francisco and is therefore good long-range planning. With the Golden Gate bridge to the north, the existing Trans-Bay bridge to the north-east, and the Army-Navy bridge to the east, San Francisco will have three well located bridges. Neither the twin bridge paralleling the existing structure nor the Army-Navy crossing, however, provide for mass transportation, although in its more recent report the cost of providing separate rail facilities has been estimated by the Army-Navy Board. The first report of the Army-Navy Board recommended that interurban

rail transportation be provided in a separate location.

If a poll were taken of the residents of San Francisco it is my belief that at least nine out of ten would be in favor of having direct rail facilities provided to the continental side of the bay. As it is, only one railroad has direct rail access to San Francisco. Nevertheless, the city would be benefited greatly by having through coast-wise train service and becoming the transcontinental rail terminal with an open door to other railway systems. In various reports, much has been said about transcontinental traffic, and not much mention has been made of the potentially valuable coast-wise rail traffic connecting Seattle, Portland and intermediate points with Los Angeles and San Diego. This traffic should pass through San Francisco. The Friendship Train from Los Angeles passed through Oakland before proceeding eastward completely by-passing San Francisco, and although this is of little importance now, it illustrates a condition which may be of vital importance in the future.

Los Angeles has three transcontinental rail lines —the Southern Pacific, the Santa Fe, and the Union Pacific. These three rail lines operate out of a union passenger station obtained by the City of Los Angeles only after 20 years of effort in proceedings which were carried to the Supreme Court of the United States three times, and there were many hearings before the California Railroad Commission and the Interstate Commerce Commission. No such delay would be necessary in the future, inasmuch as the question of jurisdiction was settled once for all. Upon completion of the station a three day celebration was held.

The argument has been raised that the volume of traffic would not justify the cost of providing such facilities in San Francisco, and that the railroads therefore would not voluntarily use them if they had them. There are however many intangible values which should be considered before it is decided to isolate the San Francisco peninsula from the continental side. Among some of the intangibles there is the added convenience to the travelling public. There is added convenience to the railroad management in the simplification of its terminal and transfer facilities and in through routing. There is added value to San Francisco in becoming the transcontinental terminus instead of being out at the end of a limb. This added value applies not only to the municipality but to the individual property owner as well. Added value will accrue to the railroads in having adequate terminal facilities in San Francisco. A railroad without such facilities is useless. Adequate commuting facilities are of the greatest importance both to San Francisco and to all of the East-Bay communities.

If the city halls of San Francisco and Oakland were connected by a straight line, the line would pass in the vicinity of the Alameda Pier in the East-Bay and near the foot of Brannan Street in San Francisco. Practically no loss of time or distance therefore would result if the Oakland Pier were connected with Pier 42 near the foot of King Street in San Francisco.

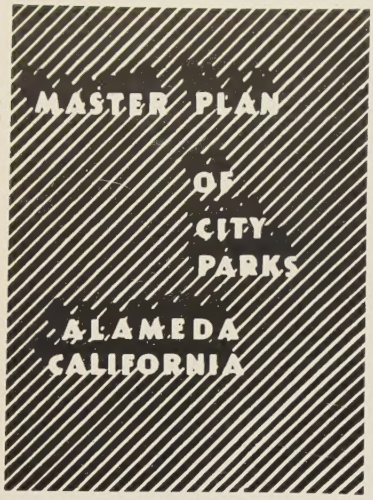
It is proposed therefore to build a high level bridge in this location exclusively for mass transportation (both passenger and freight). Two tracks would be provided for through passenger and freight trains, and two tracks for interurban service. The upper deck would be for truck and bus service, and these would be separated. The suburban trains by one route would proceed under Rincon Hill via First Street to a subway in Market Street. The other route would pass the Third Street Station.

The through trains would proceed to the Third Street Station and there terminate or continue down the Peninsula.

The Third Street Station presents one of the few and perhaps the only site for a union passenger terminal within a practicable distance from the existing business center of San Francisco, inasmuch as it is the only site of sufficient size for such a terminal which is obtainable without excessive cost. It is the only site which can be constructed at grade or nearly so, and without undue interference with existing conditions. Located as it is at one side of the business district, it will not hamper future expansion of the district. The site will permit operating the station as a through station instead of a stub terminal. This permits the operation of more trains per track per hour and will not require backing into or out of the terminal. A railway terminal does not consist merely of a head house and concourse, but requires extensive space for trackage and connections, with facilities for baggage, mail, and express, as well as coach yards and engine facilities.

If rapid transit service were provided from the existing station site to and along Market Street, practically all of the objection to this site would disappear, inasmuch as the running time between the station and Market Street would be only two

(See Page 44)



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A PROPOSED MODEL AIRPLANE FLYING FIELD

Oakland, California

AN INTEGRAL PART OF A MASTER PLAN FOR CITY PARKS

By

RALPH JONES,

A.L.A.

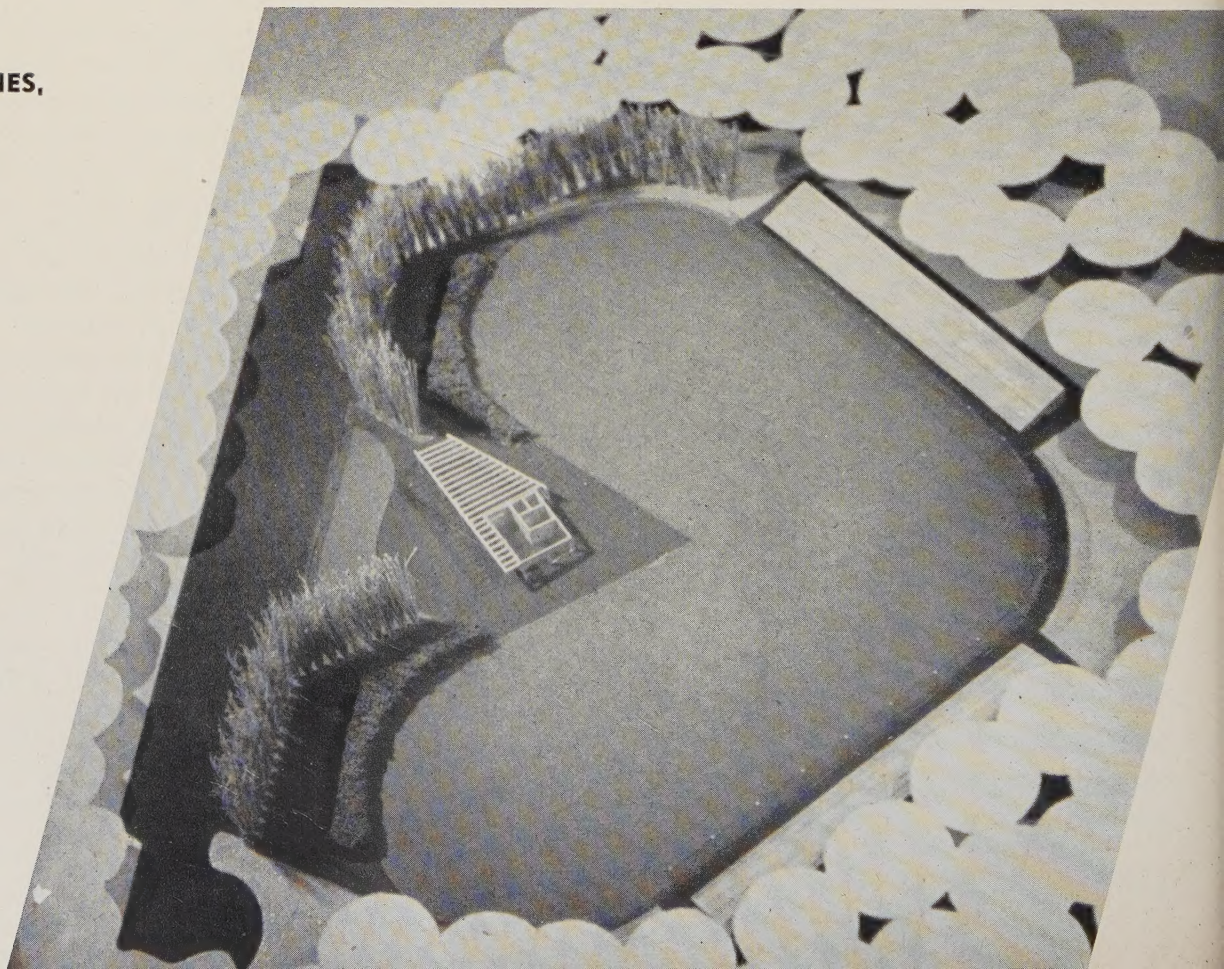


Photo shows the existing field chaos resulting from lack of segregation of activities — participants, spectators, workshop, parking — for ease of operation and for safety.

R. Cecchettini, Photo

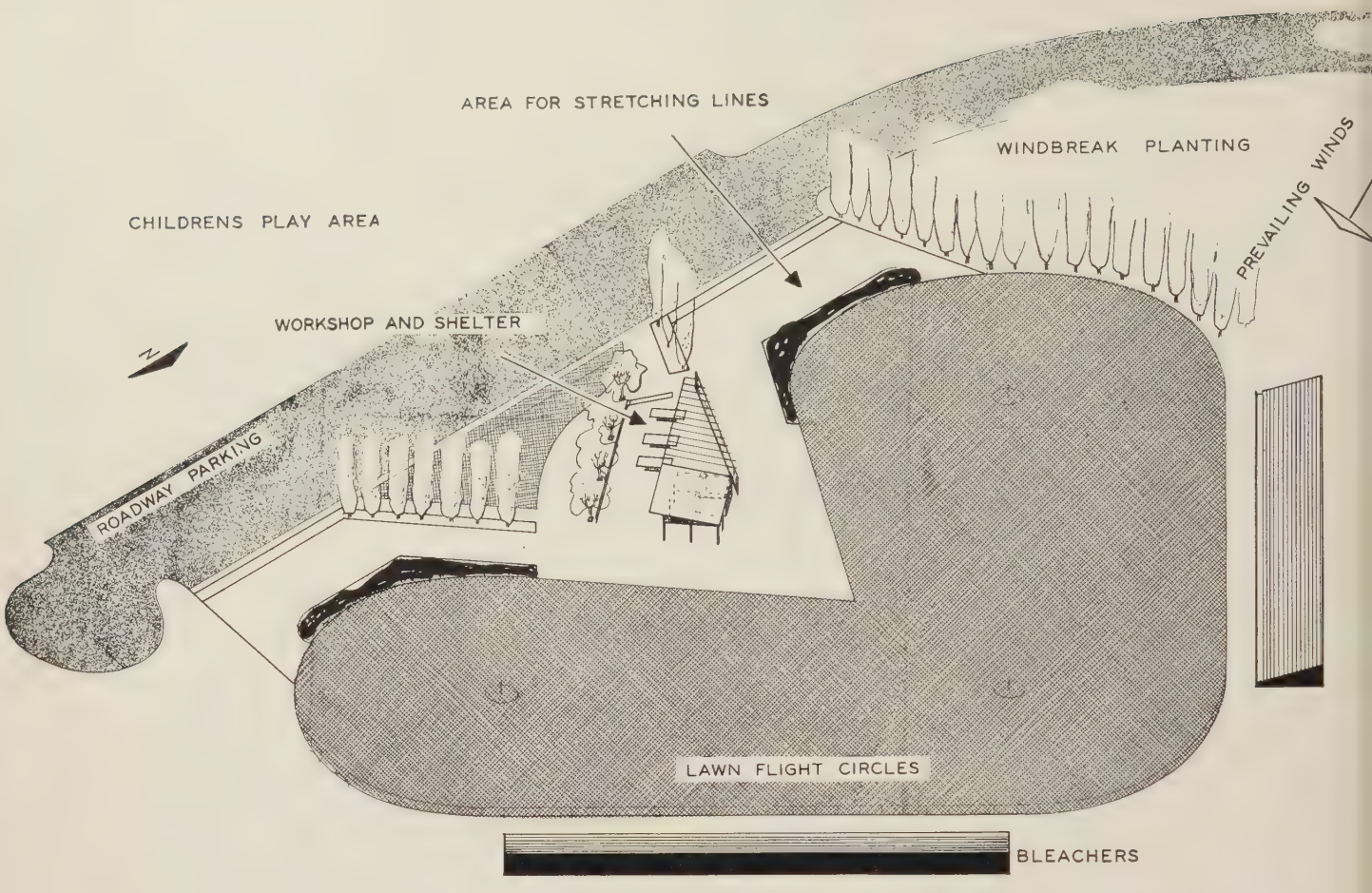
The flying of model airplanes has become an extremely important recreational activity throughout the United States in recent years, and providing adequate facilities for this popular sport has been a real challenge to park and recreational agencies. Many cities are already proposing to include carefully developed plans for these model airplane fields in their park master plans.

When the functions of this new activity are understood and facilities are designed to satisfy the overall requirements, the plan in concept is quite unique. The main considerations are the safety of the participants and spectators and the need for an area that is orderly, comfortable, adequate, easily operated and maintained, and compatible with the surrounding park areas.

Because the model airplanes travel at speeds as fast as 100 miles per hour and are held on circular course by thin control wires there is a potential danger to operators and spectators. Flight archs must also be of lawn as the planes are very delicate in construction and need a soft landing surface.

The spectators seating area must be able to accommodate upwards of 5000 people during "meets" without interference with contestants. Through proper planning however, controlling areas can be established to separate and protect

MODEL AIRPLANE FLYING FIELD . . .



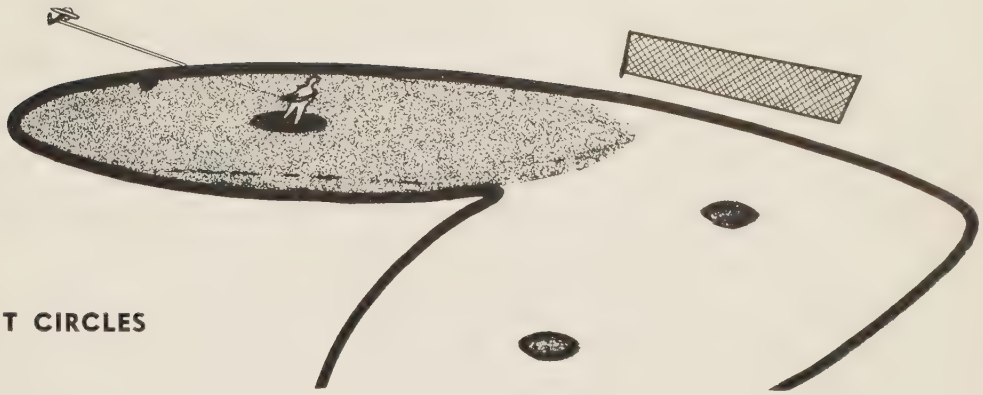
these groups, and at the same time provision can be made for the parking of automobiles. Likewise, by carefully planning, the related space can be arranged to confine operators to certain areas of specialized activity for their convenience and safety.

The sketches shown here are presented to implement this explanation of what the specialized activities are, why they are important and how a solution has been achieved in the general plan layout.

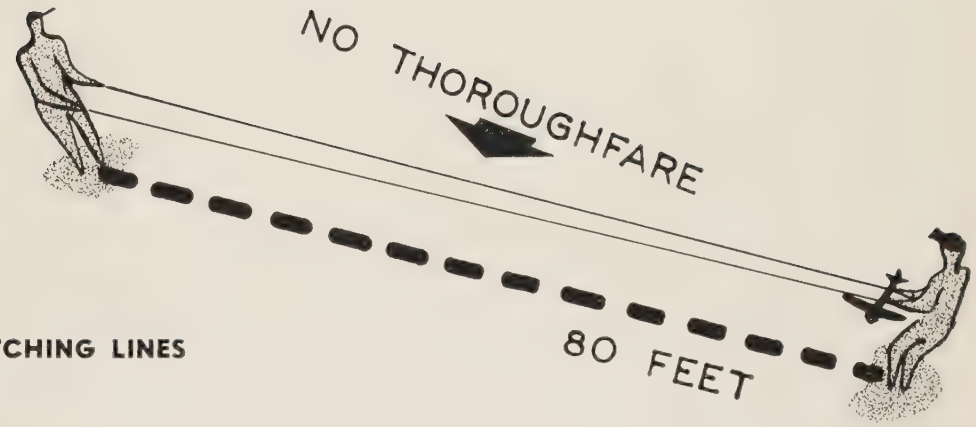
Inasmuch as state and national model airplane contests are held at such fields as shown here, it is imperative that the numerous events be expedited with regularity and precision. The precision required in stretching lines is of utmost importance inasmuch as the length of the lines must be checked by officials before contestants may compete their model planes in speed classes.

Line stretching therefore, requires a separate area screened from nearby flying models and from paths of circulation.

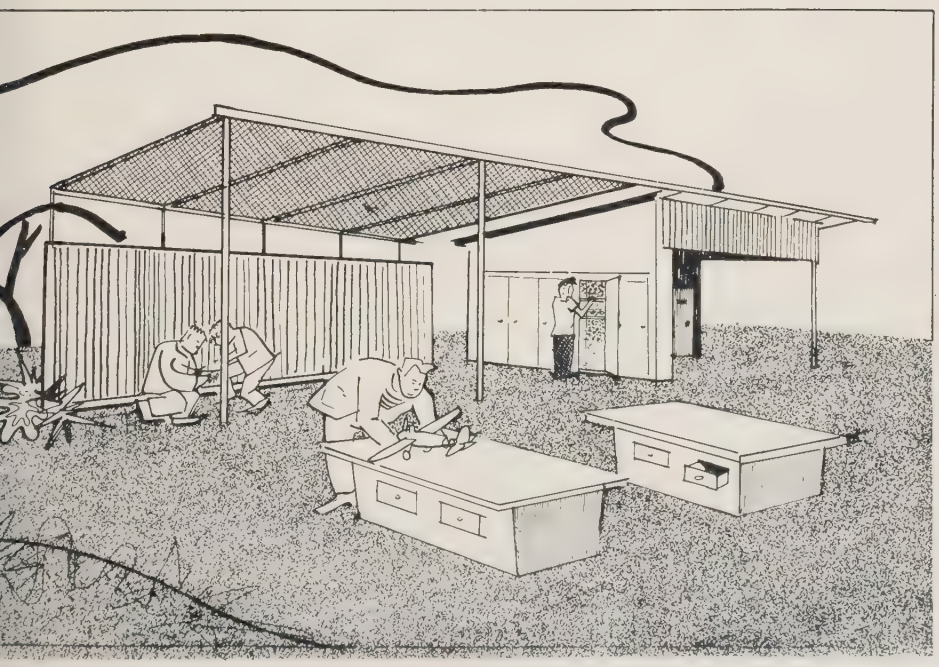
Model airplane fields must also be outside of residential areas due to "whining" noises made by the miniature motors used, and many people consider the noise as obnoxious.



FLIGHT CIRCLES



STRETCHING LINES



WORKSHOP AREA

Some Engineering Phases of Construction

By JACK SINGLETON
Chief Engineer, American Institute of Steel Construction, Inc.

It would be impossible to adequately cover all the engineering phases of construction in a single talk. I hold seminars with our district engineers annually, the meetings lasting day and night for the better part of a week, on this very subject, and we are still unfinished with the agenda when the session closes. So—the introduction of the word "some" is a lifesaver, both to you and to me.

At the time the American Institute of Steel Construction was formed, in 1921, there was most certainly a lack of uniformity in design specifications for structural steel. Prior to that time the producing steel companies, through their various handbooks, had published about the only available information on steel shapes and how to use them. A roll call of the most prominent engineers engaged in building design at the turn of the century reveals that a great majority of them secured their training on the use of structural steel in the design and drafting rooms of the steel fabricating companies themselves. Our colleges and universities gave instruction in the design of Fink roof trusses, and an individual railroad bridge or two—and precious little else. For that matter, some of them have not changed too greatly.

In 1923 the Institute knew what it wanted—a means of promoting uniformity in the design of structural steel. In that year George F. Swain, of Harvard; Milo B. Ketchum, of Illinois; E. R. Graham, of Graham, Anderson, Probst & White; W. J. Thomas, of George B. Post & Sons, New York; and Wilbur J. Watson, of Cleveland, prepared the first basic Institute specification for the design of structural steel in buildings.

That specification, evolved in 1923, has been revised and kept up to date. It has met with almost universal adoption in this country, and has served as a pattern for many foreign specifications. By its use, it is now possible to secure the degree of uniformity of thought and adaptation so necessary in this day and age.

EDITOR'S NOTE—This article is a copy of an address by Col. Jack Singleton delivered to members of the Structural Engineers Association of Northern California and the San Francisco Section, American Society of Civil Engineers, in San Francisco on February 17th.

On December 2, 1946, I made a talk to the Western Society of Engineers, subject "Recent Developments in Steel Construction." The address really concerned more than was indicated in the title; I endeavored to stress the two fundamental facts which are often lost sight of, or perhaps deliberately neglected, in any study involving indeterminate structures. They are: 1. A Method of Analysis. 2. A Method of Design.

As concerns Item 1, there are literally scores of methods of analysis available. Some 30 years ago, when I was initially not personally satisfied with available theories, I spent considerable time in securing some 68 foreign and domestic expositions of such theory; the number has increased greatly since that time. I do not question the fact that almost anyone of them, in the hands of a properly qualified exponent, will secure results perfectly satisfying the requirements of a "Method of Analysis." That method which seems best suited to the individual may be appropriately used. If the method is not economically feasible it will be so shown.

Granted that some analytical method is acceptable, as feasible or, in the last analysis usable, what you and I are primarily concerned with is a "Method of Design"—**not** a method of analysis of an indeterminate structure, but the adaptation of the results from such an analysis to a **Method** of design.

This thought is by no means an original one, but it is just as true today as when first expressed.

In any structure designed to resist wind or seismic forces we must, of course, introduce moment connections; we have done so for years largely by means of empirical design assumptions. As a result many of the connections have been heavy, but they have served their purpose. It is possible to achieve economy in design of a structure for static loads providing we can use a connection whose weight and cost of fabrication does not offset the saving in weight of main member—it is obvious that we penalize ourselves if we achieve an economy of 400 pounds in a beam and then require 500 pounds of moment connections to do the job.

SCANNED

As was the case in our original theories of continuity, where we considered a continuous beam as either free or fixed at the ends, with no "in-between" condition of semi-fixity, many beams in a structure have been considered as entirely free-ended when no moment connection was used, or fully fixed when such a restraining joint was incorporated. Actually, of course, it is almost impossible to so restrain a beam or girder to the degree necessary to obtain full fixity.

The AISC Specification, with which most of you are familiar, is in no sense of the word frozen or static. As concerns beam-to-column joints, three types are recognized in our latest specification:

Type 1: commonly designated as "rigid frame" (continuous, restrained frame), assumes that the end connections of all members in the frame have sufficient rigidity to hold, virtually unchanged, the original angles between such members and the members to which they connect.

Type 2: commonly designated as "conventional" or "simple" framing (unrestrained, free-ended), assumes that the ends of the beams and girders are connected for shear only, and are free to rotate under load.

Type 3: commonoly designed as "semi-rigid framing" (partially restrained), assumes that the connections of beams and girders possess a dependable and known moment capacity intermediate in degree between the complete rigidity of Type 1 and the complex flexibility of Type 2.

Type 1 construction is unconditionally permitted under our 1946 specification. It is, however, a necessary condition of connections of this type that the calculated stresses and resultant strains in all members and their connections occur within the elastic range, and that the stresses do not exceed those allowed in our specification.

Type 2 construction is permitted under our specification according to the stipulations. Beam-to-column connections with seats for the reactions and with top clip angles for lateral support only are classed under Type 2.

In tier buildings, designed in general as Type 2 connections, in that beam-to-column connections other than wind connections are flexible, the distribution of wind moments as between the several joints of the frame, may be made by a recognized empirical method, provided that either:

1. The wind connections, designed to resist the assumed wind moments, are adequate to resist the moments induced by the gravity loading and the wind loading, at the increased unit stresses permitted therefor, or;
2. The wind connections, if welded, and if designed that resist the assumed wind moments, are so designed that larger moments, induced by the gravity loading under the actual condition of restraint, will be relieved by deformation of the connection material without overstress in the welds.

Type 3 (semi-rigid) construction will be permitted only upon evidence that the connections to be used are capable of resisting definite moments without overstress of welds. The proportioning of main members joined by such connections shall be predicated upon no greater degree of end restraint than the minimum known to be affected by the respective connections.

Types 2 and 3 conostruction may necessitate some non-elastic but self-limiting deformation of a structural steel part, but under forces which do not overstress the rivets, bolts or welds.

We have been using both riveted and welded moment connections for many years, particularly the former, yet in the early days we had little in the way of an exact method of analysis to start with and not well-grounded a theory as to design. In tall buildings, subject to the effect of internal forces—wind—we chose some methods of distribution of the wind effect. Probably one of the methods sponsored by Robins Fleming, or some other authority. We didn't change the details at each joint, nor even at each floor, simply because the moment due to wind had changed. We developed, largely as individuals, a series of connections of varying size and strength, with total values depending in large measure on the number of rivets used. When the moment become too great for a given connection we went to a larger one. That was, perhaps, the first recognition of the importance of a factual "Method of Design" used in conjunction with a theoretical "Method of Analysis." Strangely enough—or perhaps not so strangely after all—structures so designed have performed surprisingly well.

We have, as engineers, almost always endeavored to keep the stresses within the material of a member or in a joint, within the elastic limit of the material. It is possible, however, that overload or shock load might produce stresses within the plastic range without seriously effecting the structure, and we are desirous of studying this phase.

Our usual conception of the physical properties of a material is based upon the behavior of that material under one-directional loading in tension or compression. Individual members may so perform, and in such cases the solution is simple. When members are inter-related, as in structures

(See Page 25)

WINTER TERRACE

Photographs by Esther Born

HOME...

DUTCH FLAT, CALIFORNIA

BOLTON WHITE, Architect, A. I. A.

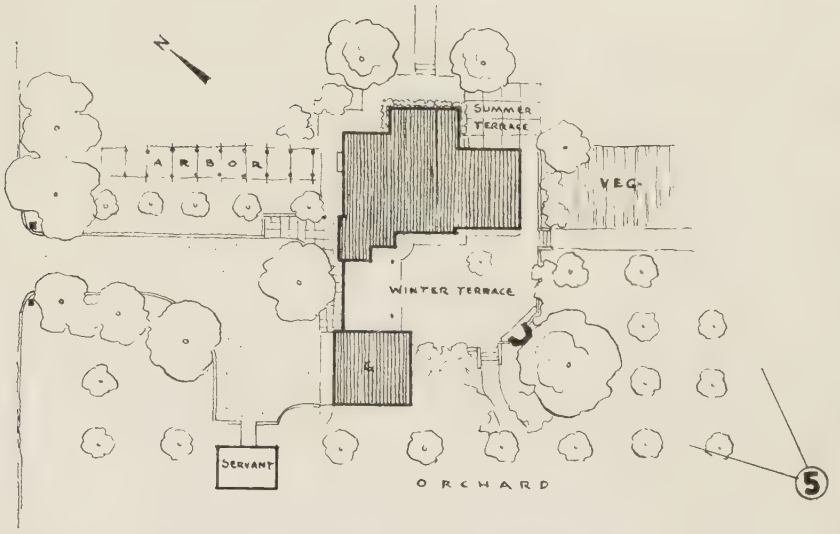
By EUGENE BURNS

A HOME built around a concert grand piano: that describes Architect Bolton White's design for Mrs. Anna Young's vacation home at Dutch Flat, California.

Using her Steinway concert grand — around which the musically-talented Mrs. Anna Young bases her own life, including operatic roles with the San Francisco Opera Company and instructing talented pupils—Architect White did the following:

He lofted the ceiling over the piano to twenty-four feet, to give the central space a cathedral-like spaciousness.

To back up the piano, he opened the side of the comparatively modest home with a huge 18-foot tall north window to let in a flood of light for good



PLOT PLAN • 1/32" = 1'-0"

music reading.

Like the piano's exposed mechanical beauty, when the wing is up, Mr. White let the structural framing of the home show—thereby combining utility with economy, which artfully conceived, produced beauty. The floors, except for the kitchen and bath, are six inch oak planks. The walls are beveled knotty-pine, placed horizontally, thus bringing down the ceiling.

For comfortable music sessions, White added a huge fireplace which in normal weather heats the entire home, even the bathroom. It was made of granite from the nearby mountains.

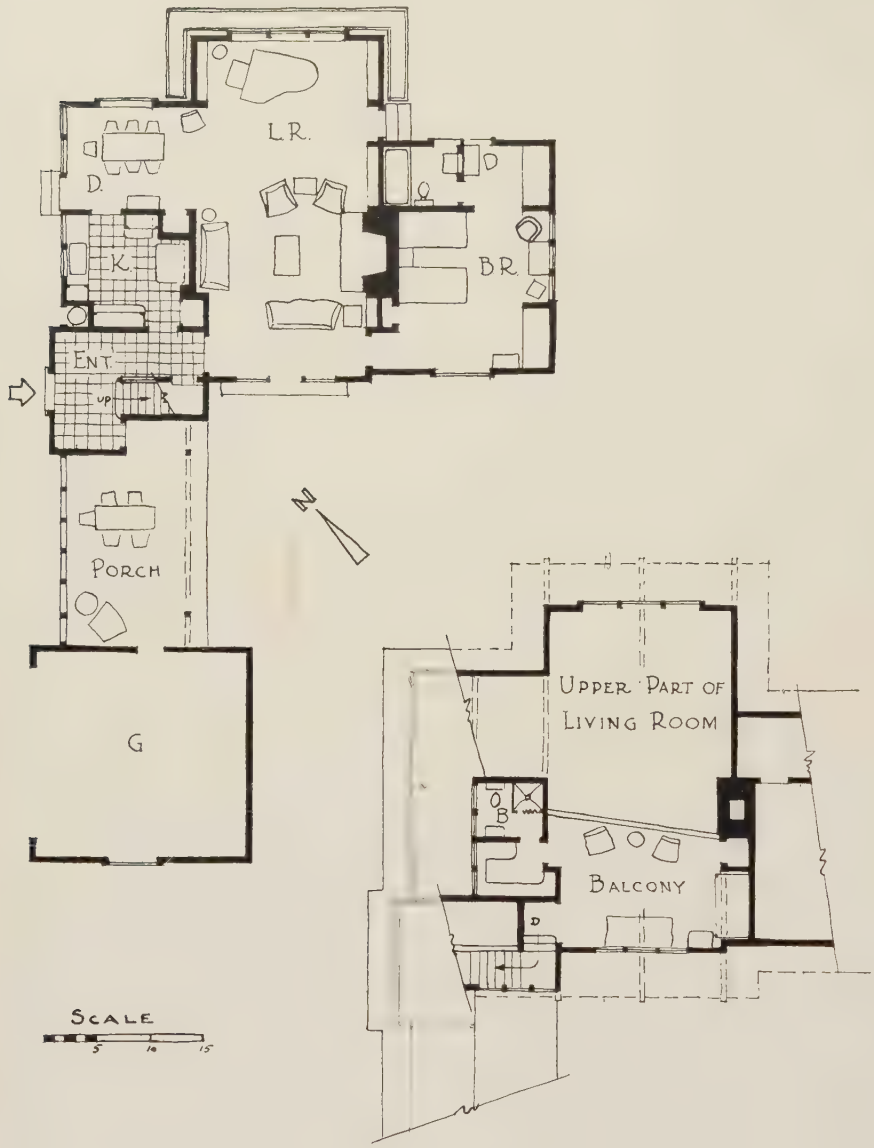
Mr. White flanked the fireplace with seven-foot bookshelves for reading matter and music scores. There is also a built-in compartment for the record changer and hundreds of records—mostly operas.

For the inevitable musicals—when fine artists get together for weekends of music—the architect added a balcony. During last fall's concert, in which three of Mrs. Young's students performed, the house accommodated 150 people—54 of them on the balcony!

Musical requirements fulfilled, Bolton White built about the large central space the necessary appurtenances of living, sleeping and service areas, keeping them to a workable minimum, although adequate to take care of week-end guests.

Mrs. Young's instructions to the Columbia, Stanford and California-trained architect were: "Bolton, I want a vacation home that will be compact and easy to maintain and yet sufficiently adaptable to accommodate week-end guests—plenty of them. And I may want to live in the house the year round."

Besides the concert grand piano, there were additional considerations Bolton White kept in mind: the site was gently sloping in an orchard; pleasant views were to the north and northeast; seasonal changes varied from hot summers to



heavy winter snows; and the town itself was made up from left-overs of the gold digging days.

Dutch Flat is an old stage-coach stop—a relict of the gold mining days, with a population of about 400. Up to its very limits, the valleys and hillsides have been churned up by placer mining. The townsite, reportedly, sits on three millions of gold—and the former owners of the Young site, still hold mining rights nine feet under the townsite.

To have built a modern exterior in Dutch Flat would have been wholly wrong. Hence to conform to the weather, the landscape, and the existing architecture of Dutch Flat, Bolton White made a very simple exterior, topping it with a steep barn-like roof to shed snow. But when one steps inside, the house unfolds—with disarming honesty and charm.

Mr. White made the main axis of the living room, north and south, capturing for his large window

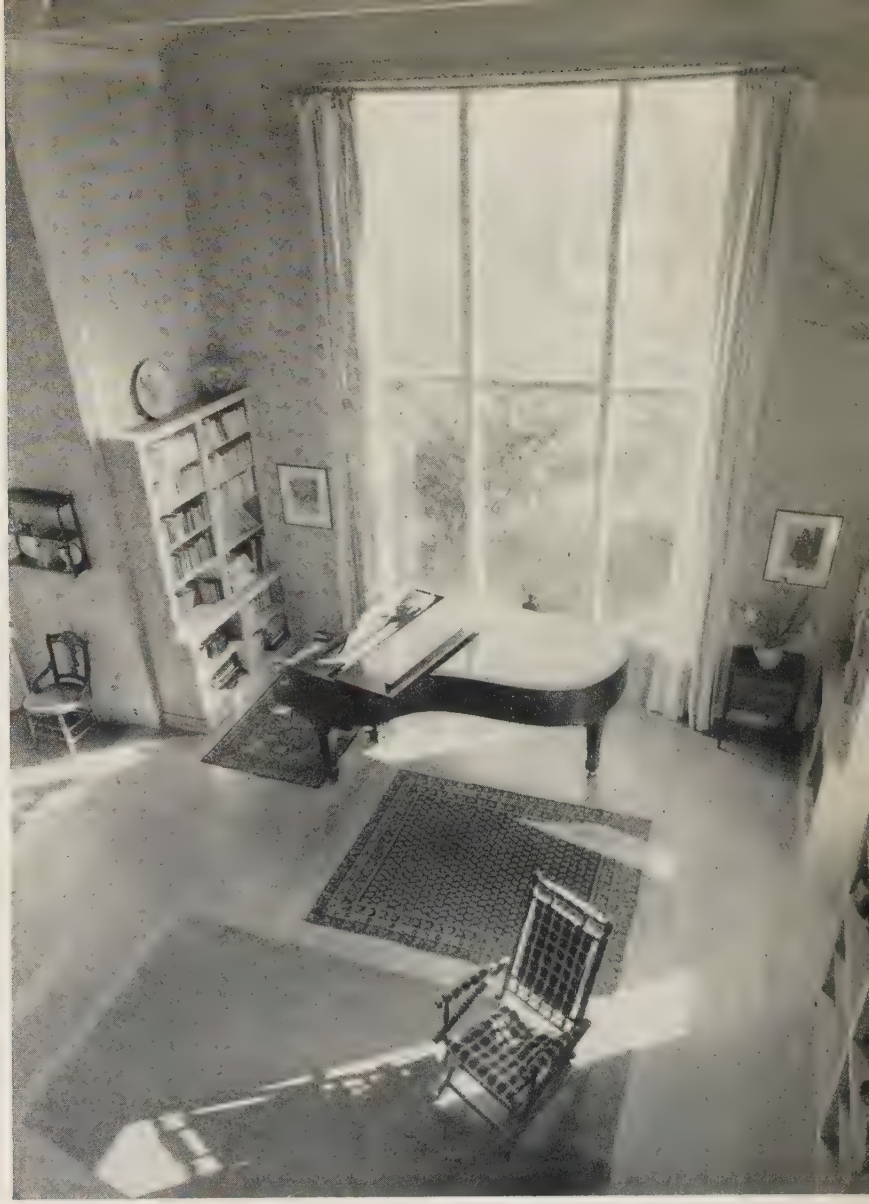
COMBINATION

LIVING AND

MUSIC ROOM

Looking down into the spacious utility living room indicates the complete blending of facilities for a general use of the area for living and entertainment.

Exposed underside of long sloping roof adds to the warm feeling of the home.



LIVING ROOM

Opposite from the music portion of the large living room are the book shelves—old fashioned fireplace with its inlaid stone hearth.

Here again the long sloping roof's exposed rafters and beams become an integral part of a rough balcony which overlooks the entire room and is used for guests during musical presentations.

the most advantageous view. He made the exposture tall enough, 18 feet, to catch the full glory of the 75-year old poplars whose yellows, in the fall, are caught up in the matching golden-yellow of the roof overhangs and exposed frame members.

Windows at the fireplace end of the room, invite the southern sun. For summer use, there is a terrace on the northeast; another, on the south, is used on cooler evenings and in winter.

Guest accommodations, with bath, are located in the bunk room balcony above the southern end of the living room. Another bedroom and bath are on the main floor.

Doors leading to the exterior are mostly glass, while those leading from the central space to other rooms are cut out of the same length of pine paneling, thereby making them unnoticeable.

The house is of wood-frame construction, built on concrete foundations. For economy, structural framing was left exposed wherever possible. Exterior walls, of pine-beveled siding, were painted a warm grey; the trim a neutral white; oiled cedar shingles are used on the roof, and the roof structure is insulated with one-half inch insulation board laid over sheathing exposed on the interior.

BEDROOM

An upstairs bedroom is designed to practical use of the space afforded by the steep roof . . . with built in closets and adequate windows, which with the rough, exposed rafters give emphasis to "western style" of construction.

STAIRWAY

Using exposed beams of the downstairs room as basis of roughed stairway to second floor.

Interior walls are finished with white pine shiplap, treated with a warm grey glaze—so that the pine knots won't jump out at you, but yet allow the grain to show through. The kitchen and baths are finished in plywood. Kitchen and entry floors are 12 by 12 inch red quarry tile.

The chimney, with a patent firebox, has ducts opening into the living room, the bedroom, and the bath. This, together with a combination wood and gas kitchen range, supplies ample heat for normal use. For winter extremes, however, there is an oil furnace in the basement.

A covered porch adjoining the southern terrace serves as a protected passage to the garage, a shield against prevailing west winds, and a pleasant, shaded outdoor dining room.

All sash, trim, and doors were made on the site by local carpenters—while White camped on the homesite and drafted detail as the work progressed. The resultant feeling of intimacy between owner, workmen and architect is reflected instantly when one steps into the home.

"The home Bolton White designed," says Mrs. Young, "makes a fine place for me and my Steinway—and the guests it invites."

THE EXTERIOR

Of the Mrs. Anna Young home at historic Dutch Flat, is attractively landscaped to blend in with the surrounding area . . . yet the home retains a distinct individuality.

All Photography by Esther Born

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involving continuity, the stress is usually not one-directional, and our usual ideas of the physical properties of the material therefore may no longer hold.

In the usual simple tension test the material may elongate considerably, after the yield point has been reached, before it finally fractures; it is then usually called a ductile material. The initial plastic yielding may then be termed an elastic failure. On the other hand, a material which breaks suddenly in the simple tension test, with little elongation or reduction in area is termed a brittle material. Actually, however, ductility or brittleness as exhibited by the type of fracture and the ability of the material to withstand permanent elongation without fracture depends not only on the physical nature of the material but on the **state** of stress as well.

The shear-strain energy theory of failure may be defined, without reference to strain energy, as:

"Plastic yielding in a ductile material will result when the octahedral shear stress reaches a certain limiting value."

I would like to quote from Hardy Cross, who has stated:

> "The interpretation of stress analysis makes doubly necessary a clear idea of the action of the structural part up to the stage at which rupture is conceivable."

A great many brilliant engineers have, for years, been engaged in theoretical study of what takes place in the plastic range of stress. Only recently Dr. Bruce Johnston of Lehigh University, together with others of our Research Committee, headed by T. R. Higgins, Director of Engineering, AISC, have inaugurated physical tests as particularly relating to localized stresses in continuous structures, notably rigid frames, in which static loads have produced stresses beyond the elastic limit of the material. It is not possible at this time to give a complete report, but such a report will be given in the future.

We are particularly desirous of knowing what takes place within the plastic range of a rigid frame joint. A great many stress-strain tests and studies have been made, principally on members and joints progressively loaded so that local stresses will exceed the elastic limit of the material. Undoubtedly, upon the release of load, the yield point of the material, due to cold-working, has been raised. We do not yet know to what extent, nor what the effect of further loading will be. We are led to believe that certain rapidly applied types of loading, much as those resulting from seismic stress, will not, within ordinary ranges, endanger a joint.

The strain studies, obtained from electric strain gages such as the SR-4, reveal non-symmetrical patterns due to many factors, but the tests must be conducted further before quantitative results may be expressed. Suffice to say that we desire to know what takes place in a rigid-frame or similar type of joint, in the interest of economy, as well as in design technique.

The postwar rise in construction costs has introduced a real problem of foremost concern, not only to you, as individuals, but to the American public as a whole. What has been, in reality, a rapid inflation in the cost—or at least the price—of building during the past year or two has drawn a great deal of attention to "productivity"—in other words, the amount of work completed in a unit of time.

Some public statements have consisted of little more than condemnation of the building industry as a whole; some have broadly condemned labor. We must consider both sides of the question in attempting to make an analysis.

This we know: the investment type of structure which has for many years been the backbone of the building industry in this country is almost non-existant at this time. I speak of the office buildings, apartments, etc., which in the past years were built by individuals or groups as a means of securing a basic income from investment. Such investment building cannot return a fair profit—nor, for that matter, any appreciable profit—on material and labor costs such as now exist.

Just why is this so?

During the years of recovery from the depression, 1933 to 1939, productivity, or the amount of work done per unit of value, was slowly but steadily rising.

During the war period, 1940 to 1945, productivity in general dropped to a low level, largely due to the general adoption of the fee-contract system. Selective Service withdrew many of the younger men from the construction payroll; efficiency of those who remained inevitably dropped because of the higher-pay, less-work idea which obtained. The need for increased labor supply resulted in an influx of inexperienced workers. Wartime construction resulted in establishing many new records for speed, but seldom resulted in efficient production per dollar of cost. The underlying theory was much the same as we experienced, or advocated, in the Armed Services—"put enough men on it to get the job done **now,** regardless of cost."

From the end of the war to the spring of 1947 things were at their worst as concerned productivity. Essential building materials were lacking; black-market materials and black-market wages

introduced prohibitive costs. Contractors dared not make firm bids; architects and engineers dared not specify desired materials. Bricklayers who had laid 1,600 bricks per day in 1939 were now laying 300 to 400, yet with marked wage increases. Forms for concrete which had once cost 18 to 20 cents per contact foot were costing 60 to 70 cents. There is no need to go further; all materials and crafts appear in the picture.

I am happy to say, however, that beginning with the start of the general construction season in April of 1947 a rather marked improvement in productivity can be noted. Many problems of readjustment have not been made, but there is a healthy trend in the right direction.

The Bureau of Labor Statistics and the Department of Commerce prepare a joint estimate each month of the value of work performed in each principal type of construction. For **all** types of building construction the value of work performed in April, 1947, was $603 millions. In September, 1947, the value rose to $814 millions—an increase of 35%. Deflating these figures to 1939 building prices to provide a correction for price changes from Spring to Fall show an increase of 27½% in the actual physical work performed.

In view of this, it is significant that the increase in hours worked, and in total employment in the construction industry were much smaller. In the April-September period considered for private contract building construction, average hours per week rose less than 2½%; total employment increased from 1,685,000 to 1,900,000—a rise of 12¾%. Taken together these figures indicate an increase in man hours worked of 15½% in contrast with an increase of physical work performed of 27½%. These government figures indicate that productivity in the building construction industry is sharply on the increase, when it is realized that by using only 15½% more man hours of labor an increase in physical volume of 27½% resulted.

Conditions are, of course, by no means normal as yet. As materials needed for building come to the site when workers need them, as standards of performance and supervision are raised, as competition increases, and on all concerned begin to realize that "the honeymoon is over"—building productivity will go up further. Labor cannot do it all; management cannot do it all. Each realizes the necessity fo joint responsibility and joint action, though cooperation.

In the structural steel fabricating industry the marked increase in labor rates, reflected in both rolling mill and fabricating shop costs, has perhaps had an adverse efect in the competitive markets, but not nearly so much as has been caused by the scarcity of the steel itself. We know that the present market could absorb many more hundreds of thousands of tons than can be furnished. So often we hear complaints of steel shortages; our fabricators may even politely (?) gripe about the small amount of steel made available to them by the mills.

Now, as a matter of actual fact, the AISC issued a press release dated January 28, 1948, which states that shipments of fabricated structural steel for the year 1947 amounted to 1,915,144 tons, which is an increase of 23.4% over the 1,551,607 tons shipped in 1946. Further, it is 30.7% over the shipments in the average prewar years of 1936 to 1940 inclusive. So, when I meet with various groups of fabricators throughout the country, as I constantly do; and hear them generally say: "We simply can't get steel from the mills," it is refreshing to have them admit, during informal general discussions, that, while they could have turned out twice as much tonnage if the steel had been in their yards—well, "after all we did pretty well."

I personally believe the rolling mills deserve a great deal of credit for their handling of a situation which might very easily have been a great deal worse.

I am, of course, concerned about the very real shortage of shapes which holds up not only our building construction program, but our highway program as well. I cannot tell you that "deliveries can be made in 3 months—or 4—or 5." I believe that I **can** tell you that the situation is easing. I can point to specific jobs where fairly good deliveries were made.

It must be understood that the entire structural steel procurement picture has changed. Not so many years ago the rolling mills had what were called "Mill Stocks"; the steel warehouse supplies likewise were available. A fabricator could depend upon Mill Shipment in a matter of days—if a certain mill could not make the required delivery, some other mill could—and would. A few tons of special sections could always be secured from warehouse.

Surely you haven't forgotten what the Steel Industry did during War II. It not only furnished literally hundreds of millions of tons of material but, in doing so, depleted its own reserves. "Scrap," it may be said, is the lifeblood of steel; how can we collect "scrap," so necessary a material to feed into our furnaces, when it has been dissipated in countless millions of rounds of artillery fire over hundreds of miles of area? Think, also, of the hundreds of thousands of shipping lying on the ocean bottoms which are irreclaimable—the maimed and destroyed material of war.

It's not a pretty picture.

Too, it is not a problem which can be solved over night because it involves the availability of basic materials, labor availability, labor costs, production efficiency, and inter- and intra-industry competitive conditions.

So, what the future holds is inevitably tied in with what has been done in the past.

Almost everywhere I go I am asked the inevitable question: "What do you think business conditions will be in 1948?"

My personal opinions, of course, could carry little weight. The joint estimate of the Departments of Commerce and Labor for total building in 1948 is $15,200,000,000 as again $12,665,000,000 in 1947. The Producers' Council figure is for $14 billion in 1948; Engineering News-Record forecasts $13½ billion with the prediction that "the gain in 1948 will not be in dollars alone; unlike 1947 there will be a rise in physical volume."

In 1947 the basic steel industry produced more than 84,000,000 tons—a tonnage greater than ever before made in a peacetime year. Walter S. Tower, President of American Iron and Steel Institute, states that steel production in 1948 should equal or exceed the output of 1947, assuming that existing and additional steel capacity can be operated without interruption from work stoppages or strikes, and without shortages of raw materials of the proper quality. The greatest possible deterrent to larger output may be insufficient quantities of good quality scrap.

Mr. Tower also states that the construction industry received approximately 3,368,000 tons more steel than in 1940; that figure constitutes 13.4% of the steel distributed in 1947, as against 10.8% in 1940.

Mr. Murray Shields, Vice-President and Economist of The Bank of the Manhattan Company, New York City, delivered an address on the subject "Some Guide Posts for Business Planning in 1948" at the Annual Convention of the AISC in November, 1947. His analysis was thorough and exhaustive, and I am only sorry that I cannot give it to you in complete form. I would, however, like to make these quotations from the paper which Mr. Shields so ably presented.

"Mortgage debt, installment debt, other obligations are all on the increase; they are at a new all-time high, but the general financial picture as one senses it from talking to bankers all over the country is that the financial stage is not set for a great financial debacle. It may be impossible to prevent a moderate recession, but the financial stage is not set for a great deflation, and we have never had a great depression in the United States without a paralyzing monetary and credit deflation.

"Now the second, and I think by far the most important, reason for assuming that if we have a depression it will be moderate, and that we will bounce up from it into a period of extremely good business is that we are in the midst of a technological revolution which will provide stimulation for our economy for many years ahead. This is probably one of the most historically propitious moments in our economic history, for we are in the midst of a revolution in technology which has already provided vast new industries and gives promise that new investment in productive enterprise is going to be for a long while ahead a dynamic force making for economic expansion.

"It is not too much to say, I think, that we stand on the edge of one of the most glorious periods of man's struggle to increase his economic well-being, for the way has been cleared for a new adventure in conquering want and in raising the standard of living. The job has been done by the scientists in our laboratories. Let me sketch out for you, if I may, a history of what American industry has done.

"In the early '20's, American industry began to make substantial investments in scientific laboratories. The men who put tens of millions into scientific laboratories knew that you do not get anything at all out of it for five years. You are lucky if you get even one productive thing in ten years of research, and it is about fifteen years before that kind of activity, expensive as it is, begins to pay dividends. And unfortunately about the time that those great laboratories were ready to spew out new means of doing old things and new industries, the depression set in. The depression was so severe that industrialists could not justify investment in new capacity or take a chance in new things. At a time like that when business is not using present capacity to the full, it is virtually impossible to get authority for spending money on additional capacity.

"That depression went on year after year, it got worse and worse, and at one time the Federal Government actually refused deductibility for full amounts spent in scientific research. But did industry stop? No. In those years when industry was losing money, when it was penalized for this sort of thing, year by year it spent more dollars for the scientific research which was to play so heroic a part in the war. It was this research which made that war a sort of Buck Rogers episode, with new machines of all kinds, and new techniques to help us win it. It was because industry in the early '20's decided to do that kind of research, stuck doggedly to it during the '30's, that there was ready for use in the war, backed up in those scientific laboratories, a store-house of new things which were largely instrumental in our winning that war. Those things were produced primarily for peacetime application; they were put to use for the war, and now they are available, gentlemen, for an episode in our history of industrial development that is likely to make the In-

(See Page 35)

EDLA MUIR, Architect, A.I.A.

THE PLAN

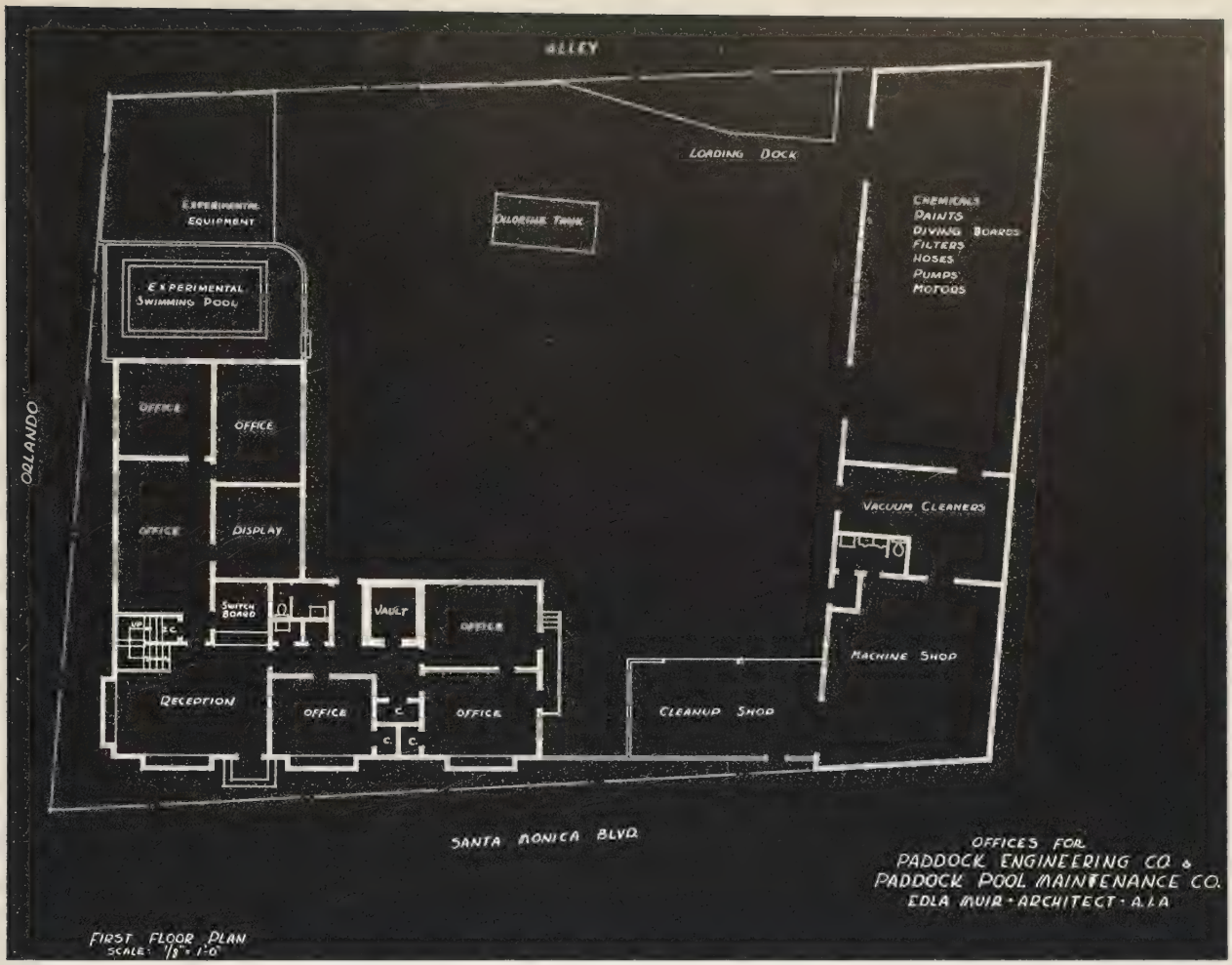
The plan problem was to design one building to house two companies; the Swimming Pool company and the Maintenance company, with a common reception room and switchboard.

The separate shop building and the yard are devoted to the use of the Maintenance company.

As the plan is now, the west wing of the building, downstairs is for the use of the Maintenance company with access to the shop and the yard.

PADDOCK POOL BUILDING

LOS ANGELES, CALIFORNIA

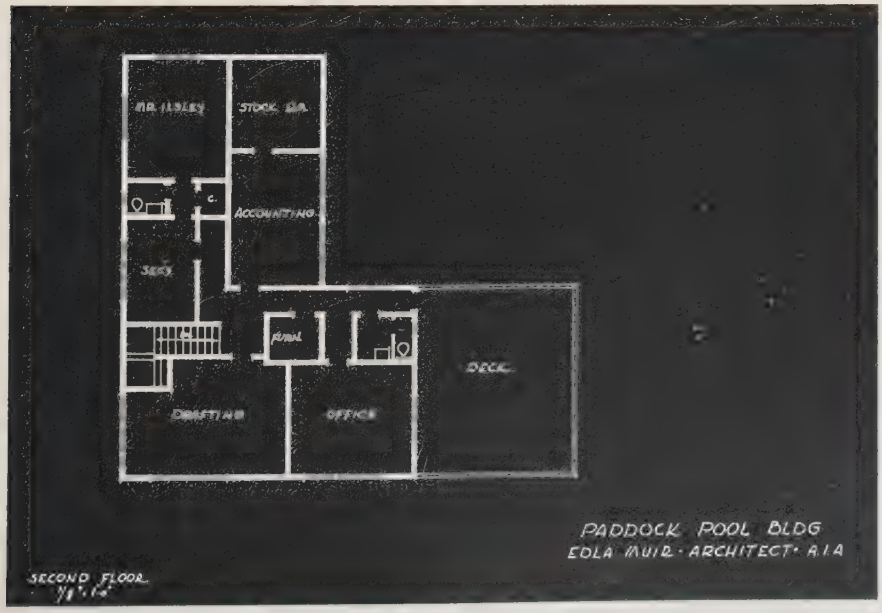


Upstairs, the open deck is for the use of all office employees, and will be furnished with garden furniture and planting.

One wall of the reception room is papered with blueprints of Paddock Pool drawings, pools, sections, equipment, and mechanical drawings—and the dark blue wall contrasts well with a clear yellow ceiling.

The President's office is completely paneled in Ponderosa pine with a green carpet on the floor and dark brown leather furniture, as is the secretary's office adjacent.

The record vault is completely fireproof.



The spaces between the building and the sidewalk on both the Orlando Street and Santa Monica Blvd. sides is paved with various types of flagstone, colored cement and and cast stone such as the Pool company uses for walks around swimming pools.

Outside of building is painted almost a black gray with pure white trim and white composition roof.

POOL AND BUILDING
SAN MATEO

WURSTER, BERNADDI & EMMONS,

Architects

Paddock
Swimming Pool
Services to Architects

Standard pool plans.

Cost data.

Permanent exhibit of pool equipment, finishes, trims, accessories, and fittings.

Mechanical and structural specification service.

Swimming pool literature for clients on pools, filter plants, chlorinators, and pool accessories.

New Paddock equipment catalog now in preparation. May we reserve a copy for you?

28 Years of INTEGRITY in Fine Pool Construction

Paddock Engineering Company

Southern California Office
8400 Santa Monica Blvd.,
Los Angeles 46 — HEmpstead 2315

Northern California Office
Seventh and Bay Shore Blvd.,
San Mateo — San Mateo 3-1889

Features of the combination office, display, fabricating shop and construction yard include:

- Radiant Panel Heating: Unique decorating and furnishings, including semi-circular desk with concealed switchboard surrounding receptionist; executive desks designed with maximum working space yet using a minimum of floor space. Office front of sliding glass panels opens to terrace around pool.

- Full sized model of "People's Pool." Display of paving materials, copings, tile trims, and masonry.
  Filter exhibit featuring various types of pressure sand and diatomite filters; exhibit of chlorinators, pool heaters, pool fittings and accessories; photographic exhibit.
  Complete mechanical and structural specification service.

A. I. A. ACTIVITIES

American Institute of Architects

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James Macmillan, President; Arthur T. Brown, Secretary, 740 N. Country Club Road, Tucson, Arizona.

Central Valley of California:
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Northern California Chapter:
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Oregon Chapter:
Walter E. Church, President; Frank Roehr, Secretary; Office 619 Builders Exchange Bldg., Portland 4, Oregon.

San Diego Chapter:
H. Louis Bodmer, President; Louis J. Gill, Secretary, 203 Granger Building, San Diego, California.

Santa Barbara Chapter (California):
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George Cannon Young, President; Theodore R. Pope, Secretary, 29 South State Street, Salt Lake City 1, Utah.

Washington State Chapter:
Clifton J. Brady, President; Arrigo M. Young, Vice-President; John Richards, 2nd Vice-President; Ralf E. Decker, Sec.; Waldo B. Christenson, Treasurer. Office 1411 Fourth Avenue Building, Seattle 1, Washington.

Hawaii Chapter::
Kenneth W. Roehrig, President; James Morrison, Secretary, 334 Federal Bldg., Honolulu, T. H.

CALIFORNIA DIVISION OF ARCHITECTURE

The Division of Architecture, State of California, has opened an office in the California Building, 515 Van Ness Avenue, San Francisco.

WARREN WEBER, Architect, A.I.A., has opened offices for the practice of architecture in the Fenton Building, Portland, Oregon.

THE PRODUCERS COUNCIL NORTHERN CALIFORNIA CHAPTER

Ernest Larson, President of the Chapter, reported on the "President's Conference" of the Producers Council which he recently attended in Chicago, and where many important phases of the Construction Industry were thoroughly discussed, at the regular February meeting in San Francisco.

Jos. A. Carlson was Program Chairman of the Meeting.

SUPERSONIC WIND TUNNEL building at Moffett Field will be extended under contract awarded to Carl N. Swenson Co., San Jose. Cost $49,734.

GENERAL ELECTRIC BUILDING MOTOR PLANT AT SAN JOSE

The general contract for construction of a new $2,000,000 G-E motor plant in San Jose, California, has been awarded to Parker, Steffens & Pearce, San Francisco, contractors.

Plans call for construction and completion of the new plant by late summer.

E. K. WOOD LUMBER COMPANY is building a $20,000 garage building at their Oakland, California, plant.

NEW OIL REFINERY. The Bechtel Corp'n of San Francisco, has been awarded a contract for the construction of a new oil refinery at Salt Lake City, Utah, for the Standard Oil Company at a cost of $5,000,000.

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WITH THE ENGINEERS

Structural Engineers Association of Northern California

John A. Blume, President; Jesse Rosenwald, Vice President; Franklin P. Ulrich, Treas.; Geo. E. Solnar, Jr., Sec.; Wm. H. Popert, Consultant; Office, Room 713, 57 Post St., San Francisco 4. Phone SUtter 1-5474. DIRECTORS, A. W. Anderson, Henry J. Degenkolb, John E. Rinne, Robert D. Dewell, and Wm. W. Moore.

San Francisco Section

L. A. Elsener, President; A. W. Earl and G. B. Woodruff, Vice-Presidents; John E. Rinne, Secretary-Treasurer; 225 Bush Street, San Francisco 20.

Structural Engineers Association of Southern California

Steve Barnes, President; Harry W. Bolin, Vice President; Lewis K. Osborn, Sec-Treas. DIRECTORS, Richard W. Ware, Geo. E. Brandow, L. T. Evans, Harold P. King, and Donald F. Shugart. Office: 202 Architects Bldg., Los Angeles 13, Calif.

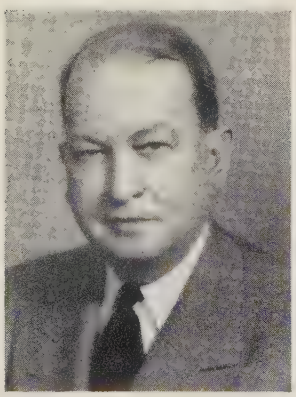
Puget Sound Engineering Council (Washington)

R. E. Kister, A. I. E. E., Chairman; E. R. McMillan, A. S. C. E., Vice Chairman; L. B. Cooper, A. S. M. E., Secretary; A. E. Nicherson, I. E. S., Treasurer; Offices, L. B. Cooper, c/o University of Washington, Seattle 5, Washington.

HEAR CHIEF ENGINEER AMERICAN INSTITUTE OF STEEL CONSTRUCTION

Col. Jack Singleton, chief engineer of the American Institute of Steel Construction, Inc., in New York City, on a nation-wide speaking tour addressed various engineering groups in the San Francisco-Oakland Bay area and Sacramento during his visit to California during February.

Singleton told a little of the history of steel and how this and the development of steel led to the founding of the American Institute of Steel Construction. This introductory part of the talk was of special value to engineers as it showed that considerable effort is constantly made to keep steel construction up to date and in step with the progress of other engineering fields. The major part of his talk covered the relationship of structural steel to the engineer and he also told a few facts about this material as used on military bridges. Following his prepared talk, "Engineering Phases of Steel Construction", Singleton answered questions from the floor.



Col. Jack Singleton

It was an opportunity for the engineers of California to learn more about the influence and economic position of the most important metal in our economy, from a man widely experienced in this field, Singleton being well qualified to talk about the military aspects of structural steel as he served as a captain in World War I and a colonel in World War II. In World War II he graduated from Command and General Staff School, served as Area Engineer in Kansas City, with Patton in the desert, and wound up as Colonel Corps. of Engineers, Chief, Bridge Branch, Office Chief of Engineers, Washington, D. C. In that capacity, directed bridge activities of the Engineer Board at Fort Belfoir, and the Bridge Test Station, Yuma, California, chiefly in the design and test of bridges used by our troops in the Rhine Crossings, in the Southwest Pacific, and India-Burma. For this work an entire plant was turned over to him. The bridges were assembled over one of the nearby rivers and complete tests made, including tests by bombing.

Singleton has evolved a new theory and method of design for continuous structures, and has achieved design and fabrication economies in structural steel. He is the author of "Manual of Structural Design," and "Manual of Moment Design," which are considered textbooks in the steel construction field.

AMERICAN SOCIETY OF CIVIL ENGINEERS SAN FRANCISCO SECTION

The Annual Joint Meeting of the members societies of the San Francisco Engineering Council was held the latter part of January at the Commerce High School Auditorium, San Francisco.

Raymond E. Davis, M ASCE, director of Engineering materials research and Professor of Civil Engineering at the University of California, Berkeley, spoke on "Observations on Europe by an Engineer."

Prof. Davis recently returned from a tour of the countries of Western Europe where he was consultant on dams for projected hydroelectric developments in Switzerland. His discussion included conditions in France, Switzerland, Belgium, Holland, Spain and Portugal.

AMERICAN SOCIETY FOR METALS PUGET SOUND CHAPTER—SEATTLE

Stainless steel in the form of castings was the subject for a talk presented to members of the Puget Sound Chapter by Mr. W. B. Kirby of the Electric Steel Foundry of Portland, Oregon. Mr. Kirby discussed the effect of different alloying elements and heat treatment on the corrosion resistance of castings; the technique of casting corrosion resistant alloys; the problems of design and the

necessity of breaking down complicated castings into components.

The importance of chromium in developing a thin adherent oxide film on stainless steels was emphasized. The steels discussed were the straight chromium steels, both martensitic and ferratic, and the austenitic steels. Nickel in the 18-8 type stainless acts as a producer and stabilizer of austenite. Carbon tends to reduce the corrosion resistance and every effort is made to keep it to a minimum. Moly is added to the austenitic steels to increase their resistance to sulphide.

Mr. Kirby stated that in order to obtain maximum corrosion resistance the chromium and other elements should be in solution. In the austenitic steel intergranular corrosion results when the material is not properly annealed or when heated in the sensitization range of approximately 800°F. to 1600°F. Austenitic steels susceptible to intergranular corrosion have chromium carbides precipitated in the grain boundaries. Proper heat treatment consists of quenching the castings from approximately 2100°F. into water. This results in dissolving the chromium carbides and retaining them in solution.

The speaker pointed out that chromium is the bad actor in the foundry process. The charge must be melted under a non-oxidizing slag so as to keep the chromium in the bath. The necessary additional chromium is added at the end of the heat because of its strong tendency to oxidize. The carbon electrode of the furnace must not touch the bath or else carbon pick up in the melt may result. The bath is heated to approximately 3200°F., but poured at 2900°F. The pouring temperature is the control for the grain size of the austenitic castings.

Mr. Kirby ended his talk by emphasizing the importance of discussing the design with the foundry and thus arriving at a satisfactory solution for both parties involved.

STRUCTURAL ENGINEERS ASSOCIATION OF NORTHERN CALIFORNIA

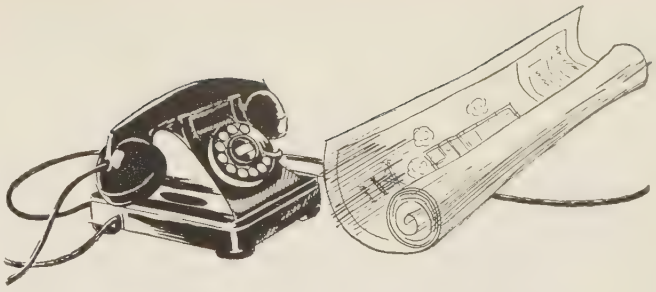
Herman Hennessey, sales engineer of the Aluminum Company of America, assisted by E. B. Burton of the same company, spoke before members of the Association at their February meeting on the subject, "Structural Applications of Aluminum."

* * *

Applicants for registration as Chemical Engineer, Electrical Engineer, Mechanical Engineer, or Petroleum Engineer under the California Civil Engineer's Act, will be required to take a written examination after June 30, 1948. Pecos H. Calahan, executive secretary of the Board of Registration points out that applicants may have to wait six or seven months before the Board can pass upon the written examinations.

* * *

Directors have sent letters of protest to steel com-



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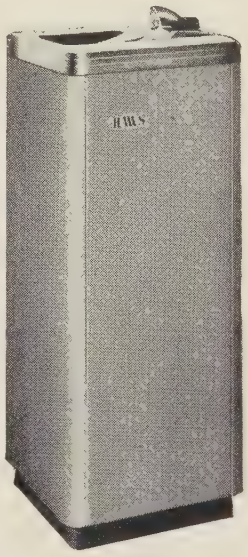

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AMERICAN SOCIETY OF CIVIL ENGINEERS

Richard E. Dougherty, vice-president, New York Central System, has been elected President of the American Society of Civil Engineers for 1948.

New vice presidents elected include Col. Carlton S. Proctor, New York; and John W. Cunningham, Portland, Oregon. New Directors are Wm. McK. Griffin and Edmund A. Prentis of New York; Joel D. Justin, Philadelphia; Julian Hinds, Los Angeles; Col. Webster L. Benham, Oklahoma City, and C. Glenn Cappel, New Orleans.

At the 95th Annual Meeting of the Society, recently held in New York, awards for the past year were presented to:

Dr. Boris A. Bakhmeteff, Professor of Civil Engineering, Columbia University, and Dean of Civil Engineering William Allan, School of Technology, College of the City of New York, the Norman Medal, for their paper, "The Mechanism of Energy Loss in Fluid Friction."

Thomas R. Camp, Boston consulting engineer, the J. James R. Croes Medal for a paper, "Sedimentation and the Design of Settling Tanks."

R. F. Blanks and H. S. Meissner, of the U. S. Bureau of Reclamation office in Denver, the Thomas Fitch Rowland Prize for their paper, "Deterioration of Concrete Dams Due to Alkali-Aggregate Reaction."

Ross M. Riegel, head civil engineer, design department, Tennessee Valley Authority, Knoxville, the James Paulie Prize for his paper, "Structural Features of Hydraulic Structures."

F. L. Ehasz, structural design engineer, Sanderson and Porter, New York City, the Collingwood Prize for Juniors for his paper, "Structural Skew Plants."

A. L. Genter, Baltimore consulting engineer, the Rudolph Hering Medal for his paper, "Computing Coagulant Requirements in Sludge Conditioning."

Maurice L. Albertson, Associate Professor, Civil Engineering Department, Colorado A & M College, Fort Collins, Colorado, the J. C. Stevens Award for his discussion of a paper, "Evaporation from a Free Water Surface."

A. A. Kalinske, engineer with Infilco, Inc., Chicago, the Karl Emil Hilgard Prize for his paper, "Conversion of Kinetic to Potential Energy in Flow Expansions."

W. HEATH TALMADGE, ASME, has been appointed general manager of the Ecomomy Steel Company of Los Angeles.

SOME ENGINEERING PHASES OF CONSTRUCTION

(From Page 27)

dustrial Revolution in England look puny in comparison. The reason is an obvious one. The Industrial Revolution took about fifty years. All the research was done in sheds back of the kitchen by some lone-wolf inventors. They just happened on to new inventions, and if one invention could not be made useful in industry until another one came along, somebody had to happen onto that one too. Years—and sometimes decades—elapsed between the major inventions.

"Contrast that with the situation today. The need for something new causes our great research laboratories to organize their resources and skills so that we get what we need in an incredibly short period.

"Our scientists have been developing new things and new processes in such volume that it is going to remake the United States, and in an incredibly short period of time. We are destined to telescope into a decade, or a generation, at most, more technological development than we could have had in the old days in a hundred years of unorganized research.

" . . . Remember that in the twenties when we had full employment, new investment was running eight to nine billion dollars a year, while in the thirties, when we had eight million unemployed, new investment was running at less than a billion dollars per year. Therefore, the meaning of the technological revolution over the long years ahead is that we need heavy investment in new facilities, and that means prosperity.

"A period of rapid technological progress means also that industry has been given the means for pricing consumer goods back into our markets. Automobiles, housing, and many other products may well have been priced out of their markets. That is a real risk, but modern technology offers us a means for reducing costs materially.

"This is one of the most powerful forces making for good business in the long run—a powerful chain reaction of progress. It is from technological improvement to lower costs, from lower costs to wider markets, from wider markets to mass production, from mass production to still lower costs, and from lower costs to still wider markets. That is the process on which American economic progress has been based, and the fact of our technological revolution assures us that we are on the edge of a new peiod of economic advance.

"Now, the point I want to make here is that while we may get a slump, it is surely not going to be a devastating depression, and it will be no

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time to go out of business. It will be no time to burn the blueprints for expanding markets and production; it will be no time to throw out the research organization, to fire the essential staff. It will be, in fact, a great opportunity to prepare a plan for expansion, to let some contracts for new capacity and for improvement of present capacity, for intensifying sales and development activities, for expanding research, for putting good men on the staff so they can be trained in time to produce some real business when the business tide turns. The time for caution is now, not after business falls off.

"Now, may I close with a prediction? We may face some troubles ahead; it would be surprising if we did not, but we do not face another soul-searing decade of deflation. The stage isn't set for it. On the other hand, once our prices and costs are readjusted and the maladjustments cleared out of our economic system, we face a period of great opportunity—opportunity to build a business and to make profitable investments. It may well be one of the two or three opportunities which an individual or a business is given in a lifetime, to make some really productive investments."

We cannot disregard the fact that American Industry won War II. The German armies simply could not realize the degree to which are armies were mechanized and equipped. Coming back into the service after War I, I was equally nonplussed. In War I, a Captain of Combat Engineers, I had actually used Civil War Pontoon Bridges in France in 1918. In War II, as Chief of the Bridge Branch, OCE, I realized what strides had been made in my own particular sphere—bridges. Those bridges were available because Industry fabricated them, to carry loads undreamed of in 1917, in adequate quantity.

In Peace or War, the work of the American Institute of Steel Construction, in developing its "Standard Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" has two primary objectives, as expressed in the following:

1. To provide the designing engineer and building official with sound recommendations governing the use of structural steel in building construction—these recommendations to reflect to the fullest all knowledge derived from extensive experimental and analytical research, and to represent the consensus of opinion of outstanding consulting engineers.
2. To strive for a uniform adoption of these recommendations to the end that design practices may be standardized on a national scale, and promoting a common basis for the widest possible exchange of experience among practicing engineers in problems of design.

IN THE NEWS

SCHOOL BONDS VOTED

Bonds for the construction of new grammar school buildings in Redwood City and Menlo Park, California, have been approved by the voters. Menlo Park will spend $250,000 for a new building while Redwood City will spend $508,000 in new buildings and additions to present buildings.

TELEPHONE ADDITION. Swinerton & Walberg, Contractors, San Francisco, have been awarded a contract for construction of an addition to the telephone exchange building in Sacramento. Estimated cost $1,750,000.

ARCHITECT SELECTED. H. J. Gogerty, Architect, Los Angeles, has been selected by the Visalia Union High School District to prepare plans for the construction of a new $1,250,000 High School building in Visalia, California.

PLYWOOD PLANT. Work has started on the construction of a new plywood plant near Anderson, California. Cost is estimated at $250,000.

HARDWARE STORE BUILDING. Cecil S. Moyer, Architect, Oakland, announces contract for $100,000 has been awarded to Geo. Peterson & Son, for construction of a new hardware store building in San Leandro, California.

SCHOOL BOND ELECTION. Voters of Stockton, California, will go to the polls on March 9 to vote on approval of a $5,250,000 bond issue for school improvements.

ARCHITECTS Leo J. Sharps and Irving F. Brown, Burlingame, California, have announced awarding of a contract to Wm. F. Lee, Contractor, San Francisco, for the construction of a $45,000 home in Hillsborough, California.

SCHOOL BONDS VOTED. $125,000 for a 6-classroom Grammar School addition to the Union Elementary School District, Campbell, Santa Clara County, California.

DRUG STORE REMODEL. L. Dunn Co., Contractors, San Francisco, have been awarded a $40,000 contract for remodel of the Owl Drug Store in Oakland, California.

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LANDSCAPE ARCHITECTURE

Notes of The Profession

ASSOCIATION OF LANDSCAPE ARCHITECTS, SAN FRANCISCO REGION

Vernon Dean, President; Robert Royston, Vice-President; Ned Rucker, Treasurer; E. L. Anderson, Secretary, 1736 Franklin, Oakland, California.

ARTHUR COBBLEDICK just completed a landscape setting for KGO's new 50,000 watt transmitter station near Dumbarton Bridge, San Mateo county. Unusual planting problems were encountered with the huge basins of concentrated salt water surrounding the new structure. Wind and saline tolerant shrubs in large sizes were planted in elevated boxes.

* * *

THE DIVISION OF LANDSCAPE DESIGN at the University of California has changed the method of judging student work. Members of the teaching staff plus either a practicing Architect, Engineer, or Landscape Architect from the Bay Area comprise a jury. Each student meets with this jury and presents his individual solution to the problem being judged, in the same manner that a professional designer presents his ideas to a client.

Long before the design is completed, each student has had the criticism of all members of the teaching staff. This coordinated method of criticism eliminates the tendency for a student to evolve a solution which is geared to a specific taste or style, and results in a more comprehensive understanding of the problem.

* * *

PROF. LELAND VAUGHAN, Division of Landscape Design, University of California, Berkeley, while on a recent trip east, conferred with Professor C. R. Sutton, Chairman of the Department of Landscape Architecture, Ohio State University, on the curricula offered in Landscape Architecture in various universities.

* * *

ALLAN H. REID, Landscape Architect, has been appointed by the Palo Alto Chamber of Commerce to act as liaison representative between the Chamber and the Palo Alto City Planning Commission. The appointment was at the request of the Planning Commission which is facing a crucial year due to rapid population growth in the area.

Mr. Reid is chairman of the Area Beautification Committee of the Chamber, which also comprises Architects Leslie Nichols and Morgan Stedman. This committee has made many recommendations for city improvement to the Chamber's Board of Directors, all of which have been approved and are being worked out.

Among the recommendations is an ordinance which would establish a Street Tree Commission, and designate its duties and purposes. City officials, the Palo Alto Garden Club, and other groups are being contacted to secure support for passage of the ordinance.

* * *

THE CALIFORNIA HORTICULTURAL COUNCIL, comprising seven member associations representing Landscape Architects, contractors, arborist's, nurserymen, and professional gardner associations held its annual meeting early in December, under the chairmanship of Ernest Higgins, at the San Francisco Junior College.

Officers elected for the new year included: Ray D. Hartman, President Leslie C. Mayne, 1st Vice President D. C. Schroder, 2nd Vice President; Douglas Baylis, A.I.A., Treasurer; and Harry E. Nelson, Secretary.

Landscape Architects present at the meeting included Bernard Wiseltier and Allan Reid, the latter in conjunction with Harry Nelson of the San Francisco Junior College Horticultural department contributed to the occasion.

EXPANSION OF CENTRAL VALLEY PROJECT IS PROPOSED

Hearings will be held in Washington, D. C., in the immediate future, on legislation designed to expand the Central Valley Project (California) by inclusion in the proposed American River development program.

As presented to Congress by President Harry Truman, the plan calls for immediate construction of a Folsom power plant, necessary transmission lines and canals and irrigation facilities which would be integrated into the presently authorized Central Valley Project.

Simultaneously, the President requested an initial construction appropriation of $3,370,000 to the Army Corps of Engineers for the Folsom Dam which would develop a 1,000,000 acre-foot reservoir, a project already approved by the State of California, the Army and the Bureau of Reclamation.

SURVEY OF VENTILATION REQUIREMENTS IN CODES

An analysis of the various state industrial ventilation codes shows that legal requirements in regard to factory ventilation vary sharply from state to state, eleven states having no codes at all, and that a majority of states have codes which are inadequate or impractical. The analysis was made by Knowlton J. Caplan and Allen D. Brandt and presented in a paper before the 54th annual meeting of the American Society of Heating and Ventilating Engineers, held in New York February 1-5. Mr. Caplan is ventilation engineer, Michigan Department of Health, while Mr. Brandt is industrial hygiene engineer of Bethlehem Steel Co.

In their paper, titled "State Laws Concerning Industrial Exhaust Ventilation," the authors included a four page table summarizing the situation state-by-state.

The authors show that 25 states have only very general requirements concerning the health conditions in industry, and that only six states have what may be regarded as a reasonably complete code or set of standards covering a number of typical operations or exhaust hood types. Of these states having rather complete codes two of them contain the design requirement that the area of the main should be equal to the combined area of the

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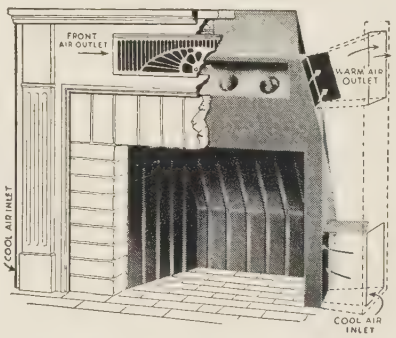

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branches plus 20 per cent. This criterion is recognized as being poor and inadequate for many types of systems.

With respect to particular operations, grinding and buffing were the most thoroughly covered, being mentioned by 12 states, five of which use the codes of the American Standards Association or closely similar data, and seven of which use standards other than ASA codes. Some of the non-ASA standards are far from practical. Spray coating and mine and tunnel ventilation were next in order of popularity, being covered by seven and six states respectively. There was little agreement in the requirements for these operations. The remainder of typical industrial operations was scattered throughout the legislation, more than 25 operations being covered in a sporadic manner.

After concluding their analysis, the authors recommended that specific and quantitative design criteria should not be included in legislation. Rather, such data, standards and recommendations should be incorporated in regulations or in advisory standards accompanying regulations in order that greater flexibility may be obtained. Furthermore, some means should be provided for the approval of control measures in those few instances in which the health hazard is adequately controlled, even though the control measures do not meet the standards and were provided under circumstances which do not fit the typical conditions upon which the standards were based.

NEW PORTABLE VILLAGE AT LOS ALAMOS

A complete village of 100 Goodyear "Wingfoot" portable two-bedroom homes is being shipped by truck from the Company's subsidiary at Litchfield Park, Arizona, to the U. S. Atomic Energy Commission installation at Los Alamos, New Mexico.

Carroll L. Tyler, manager of the Atomic Energy activities at Los Alamos, is in charge of the erection of the homes which will be used to house civilian workers and their families at the Atomic research center.

ANTIOCH MEDICAL BUILDING. Eldridge T. Spencer & Wm. C. Ambrose, Architects, San Francisco, have announced a new medical center building for Antioch, California. C. Norman Peterson, Berkeley, is the contractor.

PAROCHIAL SCHOOL at Modesto, H. A. Minton & Wilton Smith, Architects, San Francisco, have announced the awarding of a contract to the Pacific Coast Builders, San Francisco, for the construction of the St. Stanislaus Parochial School and Convent at Modesto, California. Cost of the project is $437,950.

ESTIMATOR'S GUIDE

BUILDING AND CONSTRUCTION MATERIALS

PRICES GIVEN ARE FIGURING PRICES AND ARE MADE UP FROM AVERAGE QUOTATIONS FURNISHED BY MATERIAL HOUSES TO SAN FRANCISCO CONTRACTORS. 2½% SALES TAX ON ALL MATERIALS BUT NOT LABOR

All prices and wages quoted are for San Francisco and the Bay District. There may be slight fluctuation of prices in the interior and southern part of the state. Freight cartage, at least, must be added in figuring country work.

BONDS—Performance—$10 per $1000 of contract. Labor and materials, $10 per $1000 of contract.

BRICKWORK—

Common Brick—Per 1M laid—$100.00 to $120.00 (according to class of work).

Face Brick—Per 1M laid—$215 to $250 (according to class of work).

Brick Steps—$3.50 per lin. ft.

Brick Veneer on Frame Bldg.—Approx. $2.25 per sq. ft.

Common Brick—$28.50 per M, truckload lots, f.o.b. job.

Face Brick—$75 to $90 per M, truckload lots, delivered.

Cartage—Approx. $9.00 per M.

BUILDING PAPER—

1 ply per 1000 ft. roll	$5.30
2 ply per 1000 ft. roll	7.80
3 ply per 1000 ft. roll	9.70
Brownskin, Standard, 500 ft. roll	8.00

BUILDING HARDWARE—

Sash cord com. No. 7	$2.65 per 100 ft.
Sash cord com. No. 8	3.00 per 100 ft.
Sash cord spot No. 7	3.65 per 100 ft.
Sash cord spot No. 8	4.00 per 100 ft.

Sash weights, cast iron, $100.00 ton.

Nails, $5.50 base.

CONCRETE AGGREGATES—

The following prices net to Contractors unless otherwise shown. Carload lots only.

	Bunker per ton	Del'd per ton
Gravel, all sizes	$2.44	$2.75
Top Sand	2.38	3.13
Concrete Mix	2.38	3.06
Crushed Rock, ¼" to ¾"	2.38	2.94
Crushed Rock, ¾" to 1½"	$2.38	$3.13
Roofing Gravel	2.81	3.50
River Sand	2.50	3.06

Sand—

Lapis (Nos. 2 & 4)	3.56	3.94
Olympia (Nos. 1 & 2)	3.56	3.88

Cement—

Common (all brands, paper sacks), carload lots, $3.02 per bbl. f.o.b. car; delivered $3.60.

Cash discount on carload lots, 10c a bbl., 10th Prox., less than carload lots $4.00 per bbl. f.o.b. warehouse or delivered.

Cash discount 2% on L.C.L.

Trinity White, Medusa White: 1 to 100 sacks, $3.13 sack warehouse or del.; $9.56 bbl. carload lots.

DAMPPROOFING and Waterproofing—

Two-coat work, $8.00 per square.

Membrane waterproofing—4 layers of saturated felt, $9.00 per square.

Hot coating work, $5.00 per square.

Medusa Waterproofing, $3.50 per lb. San Francisco Warehouse.

Tricocel waterproofing. (See representative.)

ELECTRIC WIRING—$15 to $20 per outlet for conduit work (including switches).

Knob and tube average $6.00 per outlet. (Available only for priority work.)

ELEVATORS—

Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing a slow speed automatic passenger elevator in small four story apartment building, including entrance doors, about $8000.00.

EXCAVATION—

Sand, $1.00; clay or shale, $1.50 per yard.

Trucks, $30 to $45 per day.

Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

FIRE ESCAPES—

Ten-foot galvanized iron balcony, with stairs, $250 installed on new buildings; $300 on old buildings.

FLOORS—

Composition Floors, such as Magnesite, 50c per square foot.

Linoflor—2 gages—$3.00 per sq. yd.

Mastipave—$1.50 per sq. yd.

Battleship Linoleum—available to Army and Navy only—⅛"—$3.50 sq. yd. 3/16"—$3.50 sq. yd.

Terazzo Floors—$1.50 per sq. ft.

Terazzo Steps—$2.50 per lin. ft.

Mastic Wear Coat—according to type—20c to 35c.

Hardwood Flooring—

Standard Mill grades not available.

Victory Oak—T & G

25/32 x 2¼"	$252.00 per M. plus Cartage
½ x 2"	$210.00
½" x 1½"	200.00

Prefinished Standard & Better Oak Flooring

25/32 x 3¼"	$265.00 per M. plus Cartage
½ x 2½"	237.00 per M. plus Cartage

Maple Flooring

25/32" T & G Clear	$330.00 per M. plus Ctg.
2nd	305.00 per M. plus Ctg.
3rd	255.00 per M. plus Ctg.

Floor Layers' Wage, $2.12½ per hr. (Legal as of July 1, 1947. Given us by Inlaid Floor Co.)

GLASS—

Single Strength Window Glass	$ .40 per □ ft.
Double Strength Window Glass	.60 per □ ft.
Plate Glass, under 75 sq. ft.	1.50 per □ ft.
Polished Wire Plate Glass	2.25 per □ ft.
Rgh. Wire Glass	.60 per □ ft.
Obscure Glass	.40 per □ ft.

Glazing of above is additional.

Glass Blocks—$2.75 per □ ft. set in place

HEATING—

Average, $2.50 to $3.00 per sq. ft. of radiation, according to conditions.

Warm air (gravity) average $64 per register.

Forced air average $91 per register.

INSULATION AND WALLBOARD—

Rockwool Insulation—(2") ..... $65.00 per M sq. ft.
Cotton Insulation—Full-thickness (3⅝") ..... $95.50 per M sq. ft.
Aluminum Insulation—Foil-mounted on both sides ..... $33.50 per M sq. ft.
Tileboard—4'x6' panel ..... $9.00 per panel
Wallboard—½" thickness ..... $55.00 per M sq. ft.
Finished Plank ..... $69.00 per M sq. ft.
Ceiling Tileboard ..... $69.00 per M sq. ft.

IRON—Cost of ornamental iron, cast iron, etc., depends on designs.

LUMBER—

No. 1 Common ..... $90.00 per M
No. 2 Common ..... 88.00 per M
Select O. P. Common ..... 94.00 per M

Flooring—

Per M Delvd.
V.G.-D.F. B & Btr. 1 x 4 T & G Flooring $170.00
"C" and better—all 170.00
"D" and better—all 170.00
Rwd. Rustic—"A" grade, medium dry 150.00
8 to 24 ft.
"B" grade, medium dry 150.00

Plywood ..... 15c to 18c per ft.
Plyscord ..... 9½c per ft.
Plywall ..... 9c per ft.
Plyform ..... 15c per ft.

Shingles (Rwd. not available)—
Red Cedar No. 1—$13.00 per square; No. 2, $10.50; No. 3, $9.00.
Average cost to lay shingles, $6.00 per square.
Cedar Shakes—Tapered: ½ " to ¾" x 25"—$17.00 per square.
Resawn: ¾" to 1¼" x 25"—$22.00 per square
Average cost to lay shakes,— 8.00 per square

MILLWORK—Standard.

D. F. $150 per 1000. R. W. Rustic $175 per 1000 (delivered).

Double hung box window frames, average with trim, $12.50 and up, each.

Complete door unit, $15 to $25.

Screen doors, $6.00 to $8.00 each.

Patent screen windows, $1.25 a sq. ft.

Cases for kitchen pantries seven ft. high, per lineal ft., $12.00 each.

Dining room cases, $15.00 per lineal foot. Rough and finish about $1.00 per sq. ft.

Labor—Rough carpentry, warehouse heavy framing (average), $65.00 per M.

For smaller work average, $75.00 to $85.00 per 1000.

MARBLE—(See Dealers)

PAINTING—

Two-coat work ..... per yard 75c
Three-coat work ..... per yard $1.00
Cold water painting ..... per yard 25c
Whitewashing ..... per yard 15c
Turpentine ..... $1.85 per gal. in 5-gal. cont.
Raw Linseed Oil ..... $3.33 per gal. in 5-gal. cont.
Boiled Linseed Oil ..... $3.23 per gal. in drums.
Boiled Linseed Oil—$3.33 per gal. in 5-gal. containers.
Replacement Oil—$2.75 per gal. in drums. $2.75 per gal. in 5-gal. containers.
Use Replacement Oil ..... $3.00 per gal. in 1 gal. cont.
A deposit of $7.50 required on all drums.

PATENT CHIMNEYS—

6-inch ..... $2.00 lineal foot
8-inch ..... 2.50 lineal foot
10-inch ..... 3.50 lineal foot
12-inch ..... 4.50 lineal foot

PLASTER—

Neat wall, per ton delivered in S. F. in paper bags, $17.60.

PLASTERING (Interior)—

Yard
3 Coats, metal lath and plaster $3.00
Keene cement on metal lath 3.50
Ceilings with ¾ hot roll channels metal lath (lathed only) 3.00
Seilings with ¾ hot roll channels metal lath plastered 4.50
Single partition ¾ channel lath 1 side (lath only 3.00
Single partition ¾ channel lath 2 inches thick plastered 8.00
4-inch double partition ¾ channel lath 2 sides (lath only) 5.75
4-inch double partition ¾ channel lath 2 sides plastered 8.75
Thermax single partition; 1" channels; 2¼" overall partition width. Plastered both sides 7.50
Thermax double partition; 1" channels; 4¾" overall partition width. Plastered both sides 11.00
3 Coats over 1" Thermax nailed to one side wood studs or joists 4.50
3 Coats over 1" Thermax suspended to one side wood studs with spring sound isolation clip 5.00
Note—Channel lath controlled by limitation orders.

PLASTERING (Exterior)—

Yard
2 coats cement finish, brick or concrete wall $2.50
3 coats cement finish, No. 18 gauge wire mesh 3.50
Lime—$4.00 per bbl. at yard.
Processed LLiLme—$4.15 per bbl. at yard.
Rock or Grip Lath—⅜"—30c per sq. yd.
½"—29c per sq. yd.

Composition Stucco—$4.00 sq. yard (applied).

PLUMBING—

From $150.00 per fixture up, according to grade, quality and runs.

ROOFING—

"Standard" tar and gravel, 4 ply—$11.00 per sq. for 30 sqs. or over.
Less than 30 sqs. $14.00 per sq.
Tile $40.00 to $50.00 per square.
Redwood Shingles, $15.00 per square in place.
5/2 #1-16" Cedar Shingles, 4½" Exposure ..... $16.50 square
5/8 x 16"—#1 Cedar Shingles, 5" Exposure ..... $17.00 square
4/2 #1-24" Royal Shingles, 7½" Exposure ..... $18.25 square
Re-coat with Gravel $5.50 per sq.
Asbestos Shingles $30 to $60 per sq. laid.
1/2 x 25" Resawn Cedar Shakes, 10" Exposure $18.50
3/4 x 25" Resawn Cedar Shakes, 10" Exposure 21.00
1 x 25" Resawn Cedar Shakes, 10" Exposure 22.00
Above prices are for shakes in place.

SHEET METAL—

Windows—Metal, $2.50 a sq. ft.
Fire doors (average), including hardware $2.80 per sq. ft.

SKYLIGHTS—(not glazed)

Copper, $1.25 sq. ft. (flat).
Galvanized iron, 65c sq. ft. (flat).
Vented hip skylights 90c sq. ft.

STEEL—STRUCTURAL—

$220 per ton erected, when out of mill.
$270 per ton erected, when out of stock.

STEEL REINFORCING—

$200.00 per ton, in place.

STORE FRONTS (None available).

TILE—

Ceramic Tile Floors—$1.70 per sq. ft.
Cove Base—$1.35 per lin. ft.
Glazed Tile Wainscot—$1.85 per sq. ft.
Asphalt Tile Floor ⅛" x ⅛"—$ .40 per sq. ft.
Light shades slightly higher.
Cork Tile—$1.00 per sq. ft.
Mosaic Floors—See dealers.
Lino-Tile—$1.00 per sq. ft.

Wall Tile—

Glazed Terra Cotta Wall Units (single faced) laid in place—approximate prices:

2 x 6 x 12 ..... $1.25 sq. ft.
4 x 6 x 12 ..... 1.50 sq. ft.
2 x 8 x 16 ..... 1.45 sq. ft.
4 x 8 x 16 ..... 1.75 sq. ft.

VENETIAN BLINDS—

75c per square foot and up. Installation extra.

WINDOWS—STEEL—

60c per square foot, $5 for ventilators.

IN THE NEWS

CALIFORNIA DEPARTMENT OF PUBLIC WORKS OPENS NEW S. F. OFFICE

The Division of San Francisco Bay Toll Crossings of the California Department of Public Works has opened offices at 74 New Montgomery Street, San Francisco, with Edwin F. Levy office engineer.

THE CITY OF RICHMOND, California, is planning a new Civic Center consisting among other buildings of a new City Hall and a new Hall of Justice. City officials estimate the cost at $1,500,000 and are taking bids on general contract, to close March 1st.

REVISION OF COMMERCIAL STANDARD FOR HARDWOOD DIMENSION LUMBER

The recommended revision of Hardwood Dimension Lumber, Commercial Standard CS60-36, has been approved for promulgation, according to the Commodity Standards Division, National Bureau of Standards. The revised standard will be identified as CS60-48 and will be effective for new production from February 25, 1948.

The original standard was developed in 1936.

The present edition sets forth minimum specifications for solid and glued-up hardwood dimension lumber in five grades of flat stock and four grades of squares, and covers a definition of the product, permissible defects, measurement, and tolerances for rough, surfaced, semifabricated, and completely fabricated hardwood dimension lumber.

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BUILDING TRADES WAGE (JOB SITES) NORTHERN AND CENTRAL CALIFORNIA

ATTENTION: The following are the PREVAILING hourly rates of compensation being paid and in effect by employers by agreement between employees and their union; or as recognized and determined by the U. S. Department of Labor. (Revised to January 1, 1948.)

CRAFT	San Francisco	Alameda and Contra Costa	Marin	Vallejo	San Mateo	San Jose	Stockton	Sacramento	Fresno
ASBESTOS WORKERS	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
BRICKLAYERS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.50	2.25
BRICKLAYERS, HODCARRIERS	1.75	1.75	1.75	1.75	1.75	1.75	1.87½	1.87½	1.75
CARPENTERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CEMENT FINISHERS	2.02½	2.02½	2.02½	2.02½	2.02½	2.02½	2.02½	2.02½	2.02½
ELECTRICIANS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
ENGINEERS: MATERIAL HOIST	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
PILE DRIVER	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
STRUCTURAL STEEL	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
GLASS WORKERS	1.87½	1.87½	1.87½	1.87½	1.87½	1.87½	1.87½	1.87½	1.87½
IRONWORKERS: ORNAMENTAL	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
REINF. RODMEN	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
STRUCTURAL	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
LABORERS: BUILDING & CONCRETE	1.40	1.40	1.40	1.40	1.40	1.30	1.40	1.40	1.30
LATHERS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
MARBLE SETTERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
MOSAIC & TERRAZZO	2.00	2.00	2.00	2.00	2.00	2.00	1.75	1.75	1.75
PAINTERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
PILEDRIVERS	2.12½	2.12½	2.12½	2.12½	2.12½	2.12½	2.12½	2.12½	2.12½
PLASTERERS	2.25	2.50	2.25	2.50	2.25	2.25	2.05	2.05	2.05
PLASTERERS' HODCARRIERS	2.00	2.00	2.00	2.00	2.00	2.00	1.87½	1.87½	1.87½
PLUMBERS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
ROOFERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
SHEET METAL WORKERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
SPRINKLER FITTERS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
STEAMFITTERS	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
STONESETTERS (MASONS)	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
TILESETTERS	2.15	2.15	2.15	1.90	2.15	1.90	1.90	1.90	1.90

Prepared and compiled by

CENTRAL CALIFORNIA CHAPTER, ASSOCIATED GENERAL CONTRACTORS OF AMERICA

with the assistance and cooperation of secretaries of Building Trades Unions, General Contractors Associations and Builders Exchanges of Northern California

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ARCHITECT'S REPORTS—A valuable advance news service giving building and construction information daily on projects in Northern California. Name, location, architect, proposed cost, etc., on individual slips. Ideal for securing new business leads. Hundreds of items, total monthly cost only $10. Don't delay, subscribe today. ARCHITECT & ENGINEER, Room 618, 68 Post Street, San Francisco, California. Phone DOuglas 2-8311.

PHOTOGRAPHS: Specializing in building and construction photographs for publication, or historic records. For Industrial-Aerial-Publicity photography use the INDUSTRIAL San Francisco.
PHOTO'S, Room 722, Hearst Bldg., San Francisco, Phone SUtter 1-6953.

WANTED experienced Architectural Designer Draftsman small San Francisco office. Exceptional pay for exceptional man. Furnish detailed outline of previous experience. All replies confidential. Box 210, Architect & Engineer, 68 Post Street, San Francisco, California.

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MASS TRANSPORTATION

(From Page 11)

and one-half minutes.

The real interurban terminal would be an elongated terminal under Market Street itself with a mezzanine concourse for pedestrian traffic from property line to property line and extending from Third Street to Valencia Street with access directly to the basements of the stores and to the subways below. This method was successfully applied under State Street in Chicago. This mezzanine incidentally, would not prevent the construction of underpasses at Third Street and other selected crossings of Market Street.

Mass transportation by motor-coach would be provided for on the upper deck of the bridge with direct connections to the North Shore Highway and the East Shore Freeway in the East Bay cities and the Bay Shore Freeway in San Francisco. It is proposed that the connection with the Bay Shore Freeway be made by utilizing Channel Street. Channel Street is a needless and comparatively useless extension of the Bay and now serves as an open sewer discharging into the Bay. By filling in this channel the double purpose would be secured of removing a menace to the public health and providing an adequate bridge approach 200 feet wide. The City doubtless still holds title to this "street". A connection with the Bay Shore Freeway, now under construction, may be effected without difficulty in the vicinity of Sixteenth Street. An approach at right angles to Market Street between Second and Third Streets would connect with the "Minnatoma Project" endorsed by the Central Council of Civic Clubs.

If San Francisco is ever to have adequate and direct rail connections with the continental side of the Bay, the decision should be made now, and such facilities should be incorporated into the general plan. If this is not done, the difficulties of providing such facilities later will become insurmountable. The Pennsylvania Railroad spent over $100,000,000 for its New York terminal facilities and connections at a time when construction costs were less than half what they are today.

ELMWOOD GRAMMAR SCHOOL. Elmore G. Ernst, Architect, Stockton announces Dan Nomellini, contractor, has been awarded a contract for completion of the Elmwood Grammar School, Stockton, at a cost of $309,908.

CANNERY ADDITION AT GRIDLEY. The Cahill Construction Company of San Francisco has been awarded a contract for construction of an addition of two warehouses to the Libby McNeill & Libby plant at Gridley, California. Cost $300,000.

BOOK REVIEWS
PAMPHLETS AND CATALOGUES

PENCIL PICTURES By Theodore Kautzky, Reinhold Publishing Corp'n., 330 W. 42nd Street, New York. Price $5.00.

This newest book by Kautzky is quite different from his previous book Pencil Broadsides which dealt principally with technique, in that PENCIL PICTURES deals with the making of pictures in pencil out of the great variety of subject matter to be found in nature.

Landscapes of the seashore, farming country, mountains and woodlands are illustrated and analyzed with attention to the arrangement of picture element in line with value to produce pleasing design pattern.

Draftsmen, student, amateur, and artist will find in the plates shown inspiring examples from which to learn.

GUIDE FOR PLANNING FACILITIES FOR ATHLETICS, Recreation, Physicial and Health Education. By Participants in National Facilities Conference. The Athletic Institute, Inc., 209 S. State Street, Chicago, Ill. Price $1.00.

Compilation of ideas gathered by fourteen national agencies and fifty-four outstanding individuals from all parts of the nation who gathered for a two weeks working conference.

Included indoor and outdoor athletics, Recreation, Physical and Health Education and facilities; Diagrams, charts, and plans of areas, and uses of various construction materials.

PLYWOOD—What it is—What it Does. By Louis H. Meyer. McGraw-Hill Book Company, 330 W. 42nd Street, New York. Price $3.50.

The author is one of the nation's outstanding advertising and Sales Counsels and was formerly Field Research Director of the U. S. Plywood Corp'n.

The book authoratively covers the composition, structure, and mechanical characteristics of plywood and kindred laminates, as well as where and how to best use plywood.

Industrial designers, engineers, architects, builders, purchasing agents and others will find this book answers most of their technical questions relative to industrial manufacture and practical application of plywood.

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100 FIREPLACE IDEAS. Price Fireplace Heater & Tank Corp'n., Buffalo, N. Y.

A 32-page booklet giving 100 ideas on fireplace design from Colonial America to the present day. Designs shown are variety of style and material. Free to Architects, Engineers, and Contractors.

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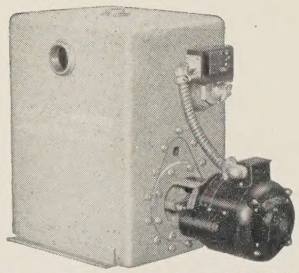

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IN THE NEWS

METAL LATH MFGR'S

William F. Saunders has been appointed Pacific Coast representative for the Metal Lath Manufacturers Association with offices in Los Angeles and San Francisco.

Saunders is reactivating the Pacific Coast offices of the Association and will offer technical assistance to the construction industry in matters concerning metal lath and its application.

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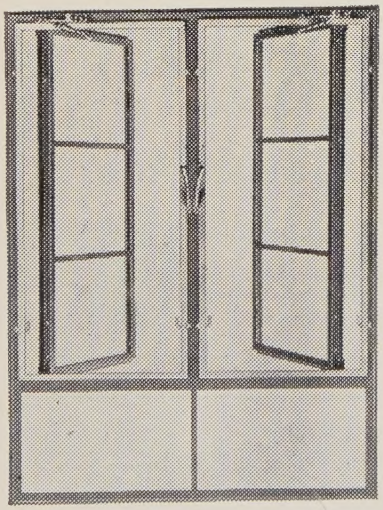

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STOCKTON 1020 E. Main St. Phone 8-8643

SAN JOSE 790 Stockton Ave. Ballard 8670

STORE REMODEL. Barrett & Hilp, Contractors, San Francisco, have been awarded contract for remodel of the Jos. Magnin Co. store in Palo Alto.

SCHOOL CONTRACT has been awarded Carl Overaa & Co., Contractors of Richmond, California, for a 15-classroom and kindergarten building in San Pablo, cost $316,000.

NEW FACTORY. Cahill Bros., Contractors, San Francisco, have been awarded a $1,250,000 contract for construction of two new factory buildings in San Francisco for the Best Foods, Inc.

RESIDENCE. Rene E. Johnson, Contractor, Burlingame, California has been awarded a contract for the construction of an 8-room home at Palo Alto at an estimated cost of $29,000.

HUNT FOODS have awarded a contract to Swinerton & Walberg, Contractors of Oakland, for the construction of a new $500,000 warehouse at Hayward, California. Douglas McLellan, Los Angeles, is the architect.

VETERINARY HOSPITAL. Frank Hensley, Contractor, Reno, Nevada, has been awarded a $25,000 contract for the construction of a veterinary hospital in Reno, Nevada.

$100,000 RESIDENCE. Gardner A. Dailey is "framing" a $100,000 residence for a client in Hillsborough, California. Wagner & Martinez, San Francisco, are the contractors.

FIBERGLAS. The Bechtel Corporation, San Francisco, has been awarded a contract for the construction of a $2,000,000 factory and administration building for the Owens-Corning Fiberglas Corporation in San Jose, California.

TELEPHONE EXCHANGE ADDITION in Redwood City, California, costing $110,000, will be constructed by Haas & Rothschild, general contractors, San Francisco.

MOORE & ROBERTS, general contractors, San Francisco, have been awarded contract for the construction of two ward buildings at the Napa State Hospital to cost $1,887,777.

ENGINEER MOVES

Clarence H. Bazille, Consulting Mechanical and Electrical Engineer, has moved into new offices in the Pacific Building, San Francisco 3, California.

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IN THE NEWS

TILE COUNCIL

A. R. McMannis, sales manager of the United States Quarry Tile Company, has been elected 1948 chairman of the Tile Council of America. He succeeds D. Parry Forst of Trenton, N. J.

The Council comprises 93 per cent of all ceramic floor and wall tile produced in the United States.

V. M. Boget, sales manager of Gladding, McBean & Co., Los Angeles, was elected to the Advisory Committee.

RADII DRAWING

Precision cut from .030 mathematical quality plastic the new Radius Master No. 76 eliminates the old trial and error method for rapid, accurate drawing of radii.

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UNIVERSITY SMALL HOMES COUNCIL of the University of Illinois has issued a basic plan for a farmhouse adaptable to requirements and living conditions on owner-operated farms and is flexible, with minor changes, for use in city locations. It is presented in an 8-page free circular. The house is planned on the modular principle (multiples of 4 inches).

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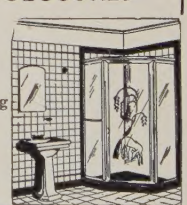

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